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ABSTRACT

The view that fundamental changes in the educational system are necessary for successful restructuring is reflected in this collection of papers. The first five papers set the context for restructuring design by presenting rationales, models, and definitions. The next three papers focus on educational design processes, and the following two papers provide specific descriptions of different educational systems. The final paper develops a new design for educational reform. The contents are as follows: "A Beginning Look at the What and How of Restructuring," by Glen Harvey and David P. Crandall; "Toward a Definition of Restructuring," by Jill A. Mirman; "Design as the Missing Piece in Education," by C. L. Hutchins; "An Outside-In Approach to Design Inquiry in Education," by Bela H. Banathy; "Resdesigning Education," by C. L. Hutchins; "A Generic Model of Organizational Inquiry for Educational Design," by C. Lynn Jenks; "Configuring the Educational System for a Shared Future: Collaborative Vision, Action, Reflection," by Beverly L. Anderson and Pat L. Cox; "A Process Analysis and Design Methodology for the Improvement of Organizational Effectiveness in Schools," by Stephen R. Mills; "The Search for Meaningful Reform: A Third-Wave Educational System," by Charles M. Reigeluth; "Sketches in the Redesign of the Local School District," by Ray Budde; and "Educational Restructuring: An Early Look," by C. Lynn Jenks and Thomas A. Shaw. (LMI)

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The Redesign of Education: A Collection of Papers Concerned With Comprehensive Educational Reform

Volume 1

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THE REDESIGN OF EDUCATION

Volume 1

A collection of papers concerned with
comprehensive educational reform.

December, 1988

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Table of Content

Page

Preface i

A Beginning Look at the What and How of Restructuring . . . 1
Glen Harvey and David P. Crandall

Toward a Definition of Restructuring 39
Jill A. Mirman

Design As the Missing Piece in Education 47
C. L. (Larry) Hutchins

An Outside-In Approach to Design Inquiry in Education . . . 51
Bela H. Banathy

Redesigning Education 73
C. L. (Larry) Hutchins

A Generic Model of Organizational Inquiry for Educational Design 79
C. Lynn Jenks

Configuring the Education System for a Shared Future: Collaborative Vision, Action, Reflection 91
Beverly L. Anderson and Pat L. Cox

A Process Analysis and Design Methodology for the Improvement of Organizational Effectiveness in Schools 111
Stephen R. Mills

The Search for Meaningful Reform: A Third-Wave Educational System 137
Charles M. Reigeluth

Sketches in the Redesign of the Local School District . . . 165
Ray Budde

Educational Restructuring: An Early Look 179
C. Lynn Jenks and Thomas A. Shaw

Preface

This collection of papers is the first of a series of planned volumes concerning the design of education. It is an outcome of an ongoing cooperative effort among three educational laboratories -- Far West Laboratory (FWL), San Francisco, CA; Mid-Continent Regional Educational Laboratory (McREL), Denver, CO; and the Regional Laboratory for the Educational Impovement of the Northeast and Islands, Andover, MA. These three laboratories designed their programs of work to include educational restructuring themes and have worked together to assemble a knowledge base intended for educational policymakers and others when considering alternative ways of organizing and conducting the educational process. FWL agreed to take responsibility for coordinating, assembling, and publishing this first volume.

With a few notable exceptions, today's educational systems continue to reflect an assembly line view of learning and most school improvement efforts tend to rely on incremental approaches. The most common perspective about educational change continues to be one of fixing or adjusting the existing system. The alternative view, one that is reflected by the papers in this collection as well as by many schools that have begun "restructuring" efforts, is that the present system is too far out of alignment with both the contemporary and future needs of learners for "fixing." Instead, fundamental changes are needed in the ways that the educational enterprise is conducted.

As school districts confront the challenges of comprehensive change, they will generate knowledge useful to those that follow. It is our intention to also make significant contributions to the growing and much needed knowledge base about the nature and processes of educational redesign. For this first volume, eleven papers are included -- all dealing with various aspects of reform.

The first five set the context for design by presenting rationales, models, or definitions. The first paper (Harvey and Crandall) explores the literature and a rich experience base concerning some of the implications for "restructuring schools." They begin with the "why of restructuring," suggest what restructuring schools might look like, and finish with issues and challenges of how to bring it all about. The second paper (Mirman) summarizes some of the various definitions of restructuring and suggests a set of common themes. Next, Hutchins introduces the concept of "design" as the missing ingredient in education reform and the "only" solution for bringing about the kinds of changes that needed. The fourth paper (Banathy) presents the rationale for an"outside-in" approach to educational design, one that calls for a major educational transformation. The last paper in this group (Hutchins) is a report of a task force that met to consider new directions for Regional Educational Laboratories to meet the challenge of educational reform.

The next three papers focus primarily on processes that educators should consider when educational design is undertaken. The first paper

(Jenks) describes a model under development that emphasizes the importance of building the organizational capacity of school districts to initiate and sustain their own renewal process. Next, Anderson and Cox describe the present educational "problematique" as beyond the capacity of single organizations and recommend a collaborative strategy as the best hope for reconfiguring the educational system. The third paper in this group (Mills) describes an effort to develop and refine Living Systems Process Analysis as a methodology for assessing school effectiveness and using the data to design and implement systemwide school improvement.

The next two papers, one by Reigeluth and one by Budde, provide specific descriptions of very different educational systems. Reigeluth presents a general approach and a specific strategy for effecting needed changes in schools and describes the structural characteristics that a third-wave educational system "should" have. Budde also presents a view of a redesigned school district with specific attention to organizational characteristics. The final paper in the collection (Jenks and Shaw) describes a framework that can be used by educators to explore the concept and the implications of developing a new design for education. Using the framework and a small sample of "restructuring" efforts, a preliminary look at the general characteristics of reform is offered.

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A Beginning Look at the What and How of Restructuring

Glen Harvey and David P. Crandall

1988

The Regional Laboratory for Educational Improvement
of the Northeast and Islands

for the

Maine Department of Educational and Cultural Services'
Restructuring Schools Project

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A Beginning Look at the What and How of Restructuring*

Glen Harvey and David P. Crandall

Within fifteen minutes of walking through the door, you realize that something exciting and exhilarating is going on. The atmosphere is charged with electricity. You can't put your finger on it immediately, but this is no ordinary school. What is it that makes it so different? Why does it stand out so clearly from other schools you've visited?

Slowly you begin to notice subtle differences. The morning announcements are celebrations -- of student birthdays, of teachers' contributions to school programs and activities, of successful community events, of a variety of student achievements. The school-community newsletter is displayed prominently as you enter the school, next to a brightly decorated bulletin board to greet the many new faces that you notice -- volunteers from the local community, area businesses, and nearby universities and colleges. Members of the community are always welcome to visit and learn more about what the school is doing to meet its goals. Partnerships with local businesses and colleges are a large part of the collaborative support system that assists the school in making the progress to which everyone so eagerly points with pride.

The hallways are covered with student art work and bulletin boards created by teams of teachers, suggesting still another, more substantial difference in the school. Teachers are collaborating with one another, across grades and classrooms. Together with their principal, they are jointly deciding the new directions of the school, in close collaboration with parents, community members, and participating businesses and colleges. Shared decision making is a critical ingredient of the school's success, as is recognizing and rewarding excellence -- in both teaching and learning.

Down the hall, a team of teachers is meeting to discuss a new set of research materials they have just received. They have invited the principal and an outside consultant to work with them in planning how to apply the new materials and information in order to develop a strategy for working with a particularly difficult student.

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* *Special thanks to Richard Card, Deputy Commissioner, Maine Department of Educational and Cultural Services, and C.L. Hutchins, Executive Director, Mid-continent Regional Educational Laboratory, for sharing their insights and wisdom as we developed this paper.*

A Beginning Look at the What and How of Restructuring

The Regional Laboratory

As you enter a classroom, you realize you haven't heard the usual sound of the bell announcing the beginning and end of class. Inside, the room exudes the change you have been sensing. The classroom reverberates with energy and excitement. You find students of different ages busily working together, alongside their teachers and volunteers. Teams of students, each reflecting the range of student abilities and backgrounds typical in the community, are working collectively on a joint project of the class. There is a feeling of caring in the classroom, with every student being treated as special and important. It is obvious that expectations are high and that all students know that they are expected to learn -- and are confident in their own abilities.

The dominant teaching mode is coaching rather than lecturing; the general style is supportive, personal, trusting, and purposive. Even the curriculum is different. Subject matter is not divided into the traditional disciplines. In this case, students are participating in a rather unique combination of calculus and literature. In other classrooms, science permeates almost every lesson. Regardless of the classroom, students are mastering basics and then moving beyond them to more abstract problem solving, pushing the boundaries of typical subject matter to better understand the challenges confronting them.

The outer shell of the building may be the same as always, but inside you have just experienced what is currently being labeled a "restructured" school. But what does it mean to restructure a school, how do you go about it, and is it really necessary anyway?

The purpose of this paper is to begin to answer these questions for faculty and administrators in Maine who are considering restructuring their schools as part of the Restructuring Schools Project. In so doing, our intentions are twofold. First, since restructuring is an innovative concept with few boundaries, we hope to stimulate ideas and visions that go beyond the traditional models of schooling, drawing on examples of schools that are actually engaged in the process of restructuring. In part, the paper is intended to create a mosaic of miniature portraits of the "what" of restructuring. There is, after all, no one best way to restructure schools. Each school must be designed to fit the context of which it is such an integral part.

Our second purpose is somewhat more concrete; it is to provide an overview of how a school could -- or should -- go about restructuring. Although restructuring is a relatively new phenomenon, a considerable body of knowledge exists about the ways in which schools can successfully manage change to achieve desired goals and visions. Our intention is to begin to adapt and apply this knowledge in ways that assist school staff tackling the enormous challenge of restructuring their schools. Nevertheless, it is important to recognize that faculty who are embarking on this quest are, in fact, breaking new ground. We know very little about the concrete "how" of restructuring, in large measure because so few schools have fully accepted the challenge.

The paper is organized into three sections. We begin with the "why" of restructuring, reviewing the reasons and rationales behind and beneath the restructuring movement that is emerging across the country. We then proceed to describe the "what" of restructuring, portraying images of a restructured school. We conclude with the "how" of restructuring, providing a discussion of the process for achieving a new image of schools and translating that image into practice.

It is important to note that we see this paper as only a beginning draft. We plan to modify it as the reality of restructuring becomes more informed by those of you actually engaged in the challenge to redesign our schools. We ask that you join with us in this effort, informing the what and how of restructuring through your own experience and learnings. In accepting the challenge to restructure, you are assuming a leadership role in one of the most exciting and potentially rewarding cutting edge reform efforts throughout the country. We hope that you will continue to work collaboratively with the Restructuring Schools Project and will share with others what you are experiencing and learning to pave the way for those who follow in your footsteps, striving for excellence in education.

Why Restructure Schools

As the old saying goes, "if it ain't broke, don't fix it." If this advice is to be heeded, the question to be seriously addressed is whether or not our schools are truly broken, requiring the massive overhaul the label "restructuring" suggests, or instead whether some more minor, well-informed tinkering might solve the problems that persist.

Few would deny that the nineteen eighties has earned the distinction of being one of the most active decades of educational reform in recent memory. Fueled by the National Commission on Excellence in Education's (1983) charge that the "educational foundations of our society are presently being eroded by a rising tide of mediocrity" (p. 5), 1983 witnessed a groundswell of public and political energy and enthusiasm for improving education that has yet to subside. At all levels -- local, state, and federal -- the amount of sustained activity and commitment to improving education has been almost unprecedented. No state in the union can be charged with not seriously accepting the challenge to initiate improvement efforts in the quest for educational excellence. Additional funds have been allocated in support of education; new policies and regulations have been developed and instituted; school improvement initiatives have been designed and implemented; curricula have been reviewed and revised; standards for students and faculty have been raised.

But have all the energy, enthusiasm, and resources been effective in achieving educational excellence? The answer is both yes and no. At the building level, many schools have made remarkable progress, providing showcases of educational excellence at its best. Similarly, some states can also boast of significant headway at the state level. In addition to many schools, districts, and states being able to point to their individual measures of success, SAT and ACT scores are remaining steady. On the negative side, however, dropout rates are at a staggering high; the 1985 National Assessment of Educational Progress (NAEP) writing assessment indicates that students possess inadequate writing skills; and educators continue to be alarmed by the inability of students to use higher order thinking processes -- to name just a few examples.

In what might be considered a second wave of reform reports, new concerns began to be voiced more loudly about the health of the educational enterprise during 1986 and 1987. The Carnegie Forum on Education and the Economy, the National Governors' Association, the Holmes Group, and the National Commission on Excellence in Educational Administration, among others, have been in the forefront of this latest call for excellence in education. There is a difference in this second wave of reform efforts and recommendations, however. As Mark Danner, senior editor of Harper's, pointed out in his assessment of the recommendations of the National Commission on Excellence in Education during a forum on "How Not to Fix the Schools," many of the proposals of the more prominent commissions and task forces of the first wave of reform represented little more than a recommendation for more of the same -- take schools as they are, for better or worse, and treat their problems by adding more, e.g., more time on task, more course requirements ("How Not to Fix the Schools," 1986). Fundamental issues regarding structure, organization, management, curriculum, instruction, and so forth were seldom addressed through straightforward, hardnosed analysis that permitted the possibility that there might be another way. In this second wave of reports and recommendations, not only is such an examination of other possibilities permissible, it is what is being called for loudly, forcefully, and with passion.

Some argue that the system truly is broken and to fix it requires more than applying a few patches and a new coat of paint. A reexamination of the entire system is required, with the ultimate result being at least a partial -- if not total -- restructuring of the system. Others would argue that schools have been fairly successful in their efforts to educate America's youth but that, nevertheless, the massive changes currently being experienced by society require that schools must make significant changes in their basic structures in order to appropriately adapt. According to McCune (1987),

> *The challenge for all of us is to keep one foot secured in the richness of our past experience and build on that experience in the improvement of schools. At the same time we must move out and begin the restructuring of schools that will match the needs of the larger society. Effective change does not call for denying or diminishing the learnings of the past, but it does call on us to move ahead and to meet the new challenges of our time (pp. 7-8).*

Similarly, in a recent presentation at "School Year 2000: An International Seminar on Creating Effective Schools of the Future," C.L. Hutchins, Executive Director of the Mid-continent Regional Educational Laboratory, stated that although "American education is better today than it was five, ten, twenty-five, fifty years ago" and that public schools "reach more students, provide more services and produce a higher level than schools of the past," the current structure of American schools is nevertheless "not sufficiently powerful to meet the needs of students who will live and work in the 21st century."

Dr. Hutchins and others make such claims in large part in response to a variety of demographic, social, and economic changes that are occurring (and are predicted to occur in the years to come) within our society and across the globe. As Cohen (1987) points out,

> *the need for education reform continues and the work of the recent past must be extended into the future . . . . because American society is undergoing profound changes, largely as a result of the combined effects of demographic changes affecting families, the workforce, and the schools, as well as changes in America's competitive position in the world economy (p. 2).*

Consider, for example, the following items and the potential consequences and demands they hold for effective schools of the future:

- Advances in technology have significantly changed the way we live, work, and communicate. According to the Commission on Reading (1985), "the world is moving into a technological-information age in which full participation in education, science, business, industry, and the professions requires increasing levels of literacy. What was a satisfactory level of literacy in 1950 probably will be marginal by the year 2000" (p. 3).

- The dropout rate in the United States is estimated to be over 29 percent. As Rist (1987) points out, "leaving school early damages a young person's chances of future success: Dropouts have more difficulty finding and holding jobs, they make up a large portion of the long-term unemployed, and the jobs they manage to land pay less. . . dropouts swell the ranks of welfare recipients, represent lost tax revenues, and are disproportionately represented in crime statistics" (pp. A9-A10).

- Although the country is currently experiencing a baby boomlet, 73 percent of families do not have children in schools, in contrast to the 1950's when one out of every two families had children attending school. Non-family households (unmarried with no children) are the fastest growing segment of our society.

- The population of the United States is aging. Twelve percent of the population is over 65 years of age; by the year 2080, it is estimated that 23.5 percent will be in this age category.

- There is a growing demand for skilled workers who can adapt to a labor force that is witnessing major shifts in its needs and is likely to continue to do so. As new jobs emerge in the service sector of the economy and disappear in manufacturing and production, labor market demands change dramatically, requiring that workers either be adaptable in their skills or that massive retraining occur. The labor force is also increasingly female and minority. In addition, in over fifty percent of the households with two parents with children, both parents are in the work force.

- The world is increasingly shrinking as communication mechanisms become more sophisticated. The concept of a world community is now a reality rather than a futuristic concept, as is the global, interdependent nature of the world's economy.

In a discussion of how appropriate today's curriculum will be in the year 2000, Harold Hodgkinson (1987) aptly observes that

> *demography has an enormous amount of predictive power, because of the simple fact that kids grow up and become the next generation of adults (p. 6).*

He then proceeds to sketch a picture of today's 5-year-olds -- many of whom will graduate in 2000. He highlights the following provocative features of the class of 2000, all of which must be dealt with by the teachers and administrators of today if these students are to be productive, educated citizens of tomorrow:

- 24 percent of these students are below the federal poverty line;

- over one third are minorities;

- while the immigration rate is about the same as it was in 1920 --

approximately 14 million -- 83 percent of today's immigrants arrive from South America and Asia (rather than from Europe, as in the 1920s), bringing with them radically different cultures, mores, languages, and so forth;

- fewer of these students are white, middle class, suburban students than in the past, given declining birthrates in the northeast and midwest and increasing rates in the more minority-dominated southeast and southwest;
- 18 percent were born outside of marriage;
- approximately 50 percent live with only one parent; the "traditional" American family of a working father, housewife mother, and two or more school age children constituted only 4 percent of American households in 1986;
- approximately 11 percent of these students have emotional or physical handicaps;
- an estimated 20 percent of the females will become pregnant as teenagers; and
- two-thirds of their mothers will be in the labor force (most of them full-time) by the time today's 5-year-olds enter high school.

These then are some of the challenges confronting today's educators. Of course, the foregoing statements are generalizations about our nation as a whole. The particulars for Maine, and for each of its communities, might differ. (Indeed, getting a handle on such information for your situation may give you valuable information.) It is in large measure a growing need to respond to these realities (many of them newly confronting educators) that underlies much of the reasoning beneath and behind calls to truly rethink our educational system and begin the very difficult task of restructuring our schools -- and the entire educational enterprise -- in ways that assure success in the future.

What Restructuring Is and Is Not

In Search of a Definition

What does it mean to restructure schools? What would it look like to restructure the entire educational enterprise? What distinguishes Theodore Sizer's Coalition of Essential Schools, which provides an excellent illustration of one approach to restructuring, from the recommendations of the Commission on Excellence in Education in A Nation At Risk, which do not represent an effort to redesign and restructure?

These are not easy questions to respond to, and there are no simple answers. Restructuring represents a new, emerging concept. There is no one, concise, agreed upon definition of restructuring nor is there a definitive model that can be applied. There are, in fact, many conceptions of a restructured school; the concept itself is one that suggests and supports the notion of multiple alternatives.

There is some agreement, however, both on what counts as restructuring and what does not count. As David H. Lynn, editor of Basic Education notes, "schools must truly be re-formed, not simply greased to do the same old thing with less friction" (1987, p. 1).

Restructuring is not adding more of the same, tinkering around the edges, even making significant improvements to the current structure. Typical school improvement initiatives, however important, and efforts to apply the school effectiveness research to schools in search of excellence do not, by themselves, constitute restructuring -- which is not to say that they are not well intentioned efforts likely to improve the quality of education our children receive.

Lynn goes on to state what he considers restructuring to be.

> *First and foremost it means that schools should be organized according to the needs of children and the ways in which they actually learn, not on rigid models half-military and half-industrial. Educators and policymakers must begin to concentrate less on so-called "inputs" -- the size of classes, teachers salaries, and graduation requirements, valid as each may be on its own -- and look more to "outcomes" -- what children, all children, can be expected to know and be able to do at various stages of their education (1987, p. 2).*

This is but one definition; obviously there are alternative ways of defining the concept. Underlying any definition of and/or approach to restructuring schools, however, is the shared belief that the current system must be rethought and redesigned in order to be more effective in meeting the demands of our changing society and in achieving commonly held goals. As Duttweiler and Hord (1987) point out,

> *in order to guide educational reform, policy makers must visualize and articulate the outcomes their system should strive to achieve, then see that those systems are designed to enable people to choose actions that have the best chance of accomplishing the goals and achieving the outcomes (p. 11).*

A Beginning Look at the What and How of Restructuring

The Regional Laboratory

To achieve real excellence in education for all students is likely to require significant alterations in what we currently recognize as our educational system -- at the local, district, and state levels. According to Cohen (1987), the necessary changes "will affect virtually every aspect of the structure and operations of the education system, from the schoolhouse to the state house" (p. 3). Efforts to restructure begin with the premise that the current boundaries and visions of education and schooling are malleable; rather than limiting images of what could be, they provide a jumping off point for considering alternative means of achieving a shared end of educational excellence.

To restructure means to preserve and build upon what has been successful in educating our children and to rethink and redesign those aspects of the enterprise that have failed. This ultimately requires taking a critical look at all aspects of schooling including:

- mission and goals of education and schooling;
- organization and management at the local, district, state, and federal levels;
- curriculum and structure of knowledge;
- instruction;
- the roles and responsibilities of educational personnel;
- the roles, responsibilities, and involvement of parents and the community;
- school finance; and
- educational regulation and control.

The sheer magnitude of this list of categories to reconsider and perhaps redesign gives a general sense of the meaning of restructuring, as well as some understanding of the level of effort and length of time required to take on a restructuring endeavor. Unfortunately, the prospect of rethinking the educational enterprise in its entirety is more likely to be experienced as overwhelming than enticing and stimulating, particularly when it is presented in abstract concepts and categories rather than concrete portraits of alternatives. We have therefore provided descriptions of actual ongoing restructuring efforts in Appendix A, including contact information for schools in Maine that are participating in these initiatives. As you embark on your restructuring adventure, we hope that you will agree to be added to this list.

Included in Appendix A are descriptions of the following efforts:

- Coalition of Essential Schools;
- National Network for Educational Renewal;
- NEA Mastery in Learning Project Schools;
- The Holmes Group; and
- the Carnegie Forum on Education and the Economy's Task Force on Teaching as a Profession.

It is important to note that these initiatives and their respective sets of recommendations are provided only as examples -- as jumping off places to stimulate the reader's own creative imagination. To restructure means to first identify the mission and goals that are desired and then to design a system that will allow the successful achievement of the goals and enactment of the mission. To simply adopt one of the alternatives described in Appendix A may result in traveling down a path leading to an unwanted destination.

Critical Components of Restructuring

The five examples discussed in Appendix A graphically illustrate the view that there is no one right way to structure (or restructure) schools. Each school must be designed to achieve its individual mission within the community in which it finds itself. As Fullan (1982a) aptly reminds, change is bound by its context. "The history, personalities, and socio-political climate within each setting constitutes major determinants of change outcomes" (p. 4). As a result, restructured schools may look quite different from one another, reflecting different community realities, needs, beliefs, and values.

Nevertheless, looking across the various efforts to restructure schools, significant similarities begin to emerge. Taken together, the following core components of restructuring can be identified as critical, the majority of which are overlapping and interactive with one another.

- Focus at the Building Level. If significant changes in the educational system are to occur, restructuring efforts must be focused on and driven by the local level. Obviously changes of the magnitude of those discussed above cannot be achieved without involvement at the district and state (if not federal) levels -- but the message is clear and consistent: if restructuring is to be successful, it must be building-based. In the view of the Committee for Economic

Development, for example, "reform is most needed where learning takes place -- in the individual schools, in the classroom, and in the interaction between teacher and student" (1985, p. 17). On a similar note, Timar and Kirp (1987) point out the limitations of a top-down approach.

> *A school must set a tone that will be apparent to the students. That tone, an organizational ethos, determines the character of the school. It sets the expectation for excellence or failure. But it is created by individuals working in schools, not by bureaucratic mandates that emanate from distant places (p. 328).*

- **Educate ALL Students**. Underlying approaches to restructuring is the belief that **all** students are important and that **all** can and must learn. It is noteworthy that discussions of restructuring spend considerable time discussing the ways in which schools must be redesigned in order to better meet the needs of students who traditionally have been failed by the current structure.

- **Clarify and Raise Expectations**. Just as restructuring efforts maintain that all students must receive a quality education, they expect that all students will achieve mastery of widely agreed upon skills and curricular areas. Similar to the effective schools research, an emphasis is placed on clarifying and sharing high expectations for student performance and behavior. The emphasis on expectations is not limited to students, however. Teachers, administrators, parents, and other members of the community are also expected to meet certain standards and responsibilities and play particular roles. The mission and goals of the school must also be clear -- and they must be shared and endorsed by students, teachers, administrators, parents, and the community alike.

- **Personalize Teaching and Learning**. The concept of "personalizing" teaching and learning can hold many different meanings for different people. However, common to restructuring efforts is the notion of a child-centered approach to instruction. Coaching, tailoring, and individualizing are all frequently referenced approaches. More traditional approaches to both curriculum and instruction are rethought and generally redesigned in restructuring efforts.

- **Rethink and Alter the Roles and Responsibilities of Educational Personnel**. Many of the recent restructuring efforts have focused on reexamining the roles and responsibilities of teachers and professionalizing the field of teaching, as evidenced by the work of The Holmes Group and the Task Force on Teaching as a Profession as well as by efforts such as the one occurring in Rochester, New York (see Appendix A). Although there are a variety of aspects to consider within this component, one of the most prominent among restructuring efforts is the notion of shared decision making and shared leadership. As the President of the Rochester Teachers Association pointed out, "If accountability means assuming responsibility for the decisions and choices that one makes, then teachers, to be held accountable, must not be locked out of the decisionmaking process" (Urbanski, 1987, p. 25). Similarly, in his report (1987) on educational leadership, Governor Bill Clinton draws on the observations and insights of Rosabeth Moss Kanter:

> *The model of the single leader may be declining in favor of a coalition of leaders ... who act together and divide various leadership functions among themselves. In fact, it may also be important to ensure that a much larger number of members of the organization are capable of taking on pieces of the leadership role. What will be important is that the functions are served -- not that any single person has total responsibility for performing them (p. 12).*

- Apply Research and Development Knowledge. If restructuring efforts are to be successful and are to avoid costly trial-and-error experiments and often counter-productive duplication of effort, it is critical that faculties turn to available research and development (R&D) for insight and guidance as they embark on their restructuring efforts. It is equally important that they continue to draw upon R&D as their restructuring initiative progresses.

- Humanize the Organizational Climate. The overlap of this component with many of those cited above is obvious. The notion here is that the school, as well as the classroom, must be a pleasant environment conducive to learning and working. Again, the emphasis is on looking across all members of the educational community to ensure that the school provides a place that nurtures and supports them in their collective efforts to grow.

- Involve Parents and the Community. Consistent across restructuring efforts is the emphasis on increasing the active (as opposed to superficial) involvement of parents in the education of their children. As evidenced by the examples above, additional emphasis has also been placed on moving beyond parents to raise the level of involvement and commitment of other community members as well. Partnerships -- with area businesses and local colleges and universities -- are playing an increasingly important role in efforts to redesign the country's schools. Community support and commitment are important factors to success.

It is critical that each of these eight components be examined and addressed in any restructuring effort. While it is not necessary to respond to and reflect every component in the short-term and on the same timeline, we would argue that to constitute a "restructured school" ultimately requires incorporating each of the components into the overall design.

How to Begin Restructuring

Just as there is no one right image of a restructured school, there is also no one right way to go about restructuring. As Michael Fullan (1982b) points out:

> *there can be no one recipe for change, because unlike ingredients for a cake, people are not standard to begin with, and the damned thing is that they change as you work with them in response to their experiences and perceptions (p. 129).*

Nevertheless, there is a considerable body of research and experience that has arisen through recent school improvement efforts that provides an impressive point of departure in efforts to restructure.

In many respects, restructuring can be approached in a fashion similar to implementing multiple, intertwined school improvement efforts, with the understanding that they are incredibly more massive and complex. As evidenced by the discussion above and the examples contained in Appendix A, to restructure requires much more than making a minor -- or even major -- change in one aspect of the school. It requires rethinking and redesigning the entire system. Clearly you need to begin somewhere -- and that somewhere may be with changing one aspect of the school -- but the vision must encompass the overall system as must the plan for eventually restructuring it.

Getting Started: Establishing a Team and Creating a Vision

We recommend that you begin by establishing a multiconstituent building-level restructuring team to provide leadership and guidance to the effort. Leadership is critical to the success -- or failure -- of any restructuring effort. To take a lesson from school improvement efforts, Fleming and Buckles (1987) warn that

> *an increasing number of leaders report that the success of their efforts depends on the composition, influence, and skill of the staff assigned to steer complex projects. For leaders who will be working with school improvement teams for the first time, the selection and guidance of team members and the establishment of*

> *ground rules for discussion, decisionmaking, and workscope, are essential (p. 3).*

Harvey and Hergert (1986) emphasize a number of relevant points in their discussion of the fundamental role people play in change efforts, i.e.:

> *First, particularly in major change efforts, everyone has some type of role, e.g., teachers, trainers, administrators, policy makers, parents. The use of multiple strategies can involve many people doing many things . . . .*
>
> *Second, forceful leadership, usually by a district-level administrator or building principal, is "the factor that contributes most directly . . . to major, effective changes in classroom practice that become firmly incorporated into everyday routines" (Crandall and Loucks, 1983, p. 10) . . . .*
>
> *Third, sticking with the effort rather than transferring responsibilities entirely to users can make a difference (pp. 294-295).*

One of the first and most crucial tasks of the restructuring team is to create a vision of the "restructured school." It is absolutely critical to develop a shared vision of the restructured school at the outset. The vision must be one that both the school community and the community at large can endorse and support. Given the radical departure from the norm that restructuring efforts represent, the more concrete the vision, the better.

The examples described in Appendix A are provided as one stimulus to developing such a vision. We strongly recommend that the team actually visit schools that are involved in restructuring both to assist in developing their own unique vision as well as to begin to identify strategies for enacting that vision. There is a definite benefit to seeing alternatives in action and in learning from those who have been involved in the restructuring process. Contact information for schools in Maine has been provided throughout Appendix A in order to facilitate the process of identifying possible sites to visit.

It is important to realize, however, that simply observing will be insufficient to create any meaning out of what the team has witnessed. Preparation for such visits is vital if the team is to benefit. The team must come away from the visit with more than a positive feeling about the school and its accomplishments. It is necessary to have a clear understanding of what changes were made, how and why they were made, what problems and obstacles were encountered, how and when success was defined, and so forth.

A galvanizing theme, motto, or slogan may be quite helpful both in articulating the vision more concretely as well as in developing the necessary school and community support that will be needed if the restructuring effort is to succeed.

Moving from Vision to Reality: Developing and Implementing a Plan to Restructure

Loucks-Horsley and Cox (1984) identify three distinct phases of the change process that must be addressed in improvement efforts -- phases that equally apply to restructuring efforts. These include initiation, implementation, and institutionalization. Below we briefly review each of these phases within the context of setting forth to restructure a school. Because of the limited nature of our discussion, we encourage readers to explore additional sources of information upon which we have based our guidelines. A listing of selected resources is included as Appendix B.

The Initiation Phase. The initiation phase (also referred to as mobilization) involves:

- identifying the problems to be addressed;
- establishing goals and priorities;
- identifying strategies, approaches, resources, etc.;
- developing an overall plan; and
- preparing for implementation.

This is a particularly critical time for restructuring efforts. It is at this point that the image or vision of the entire restructuring effort is translated into a workable plan, which will then be implemented in the subsequent implementation phase.

As was apparent in many of the restructuring examples described in Appendix A, a key activity during the initiation phase is to identify the **problems** you are trying to address through your restructuring effort. In school improvement efforts, Loucks-Horsley and Hergert (1985) suggest the following data sources for defining the problem: classroom and school observations; test scores; surveys of parents, teachers, and students; interviews of parents, students, and teachers; and documentation of activities. They caution, however, that the team should not spend too much time on assessment. This is a warning even more critical in restructuring efforts. It is not difficult to imagine a scenario where so much time, energy, and even resources are spent identifying the problems the team intends to solve that there is nothing left for the solution.

Understandable, supportable goals that paint a colorful picture of success will also be invaluable in providing continuous guidance to the team while simultaneously serving as a mainstay of the ongoing public relations work any restructuring effort requires. As Fleming and Buckles (1987) point out in their discussion of implementing school improvement initiatives:

> *good planning will assure that there are short-, mid-, and long-term goals; goals that affect policy as well as programs or practices; and goals that have implications for all levels of the school community (p. 3).*

This is doubly true for restructuring efforts, given their long-term, complex nature and the fact that they must ultimately have impact upon all levels of the educational enterprise.

In school improvement efforts, the next step in the initiation phase is to identify strategies and solutions, which are then developed into an overall school improvement plan. Loucks-Horsley and Hergert identify six sub-steps within this solution facet:

- identify local resources and constraints;
- develop criteria for the solution;
- locate outside resources;
- apply criteria for solutions;
- make a decision; and
- transform a solution into a definable practice.

This is a complicated, time-consuming process even in relatively straightforward, narrowly focused school improvement initiatives. In restructuring efforts, the task is likely to be enormous. However, clearly defined problems and goals with an overarching vision will provide strong guidance and definable parameters. Well-planned visits to schools that are undergoing restructuring are particularly helpful at this juncture of the process, as is a careful examination of the relevant research and available programs, practices, and policies that have proven effective in addressing similar problems within similar contexts.

The final aspect of the initiation phase is developing an overall plan and preparing for its implementation. Loucks-Horsley and Hergert again identify a number of sub-steps that must occur in improvement efforts, i.e.:

- create awareness;
- select implementors;
- assess current practice;
- set expectations;
- assign support roles;
- make logistical arrangements (e.g., for training, facilities, personnel); and
- create a timeline of activities and events.

Obviously, for a restructuring effort, this portion of the process is crucial and can become overwhelming. There may be the tendency for team members who have been involved in school improvement initiatives to either underestimate the amount of time and effort this (and the entire initiation phase) will require because of confidence in their ability to plan OR to become overwhelmed with the magnitude of the planning task in contrast to prior improvement efforts in which they have been involved.

There may also be a tendency in approaching restructuring (a) to believe that everything must be done simultaneously and (b) to ignore ongoing improvement initiatives within the school. In developing the overall restructuring plan, every effort should be made to incorporate existing improvement activities, developing a coherent, coordinated, comprehensive strategy that builds on existing strengths, energies, and commitments. Similarly, if a long-range plan and vision exist as guiding beacons, restructuring can be made much more manageable if the plan is thought of as a developmental effort, with various aspects of the overall initiative being timed and implemented in stages. The key is balance -- balance between planning and action, short- and long-term efforts, ongoing and new initiatives, security and risk taking, and perhaps most importantly, realism and idealism.

Critical to the entire effort is the support of the community and all the key players. This in itself is an enormous (and ongoing) task. Because of the nature of restructuring -- redesigning the entire system -- the local school board, teachers union(s), faculty, district personnel, and others must all support the new vision. As Mary Futrell points out:

26

> *It's now time to listen to the teachers and parents, to the administrators and school board members who are willing to risk putting ideas into action. We need people on the front line of education with the courage and the foresight to reconstruct curricula, radically alter how schools are organized, and make a clean break with the assumptions that have long determined the nature of the learning experience.* (Futrell, 1987, p.5)

It is likely that at least some aspects of the restructuring plan will be inconsistent with either the union contract or district policies, if not both. This will require up-front agreements concerning the ways in which conflicts will be resolved. For example, in a recent column, Albert Shanker showcased the achievements of the School Improvement Process in Hammond, Indiana, citing an agreement between the Hammond Teachers Federation and the Board of School Trustees that allows such conflicts to be resolved without either the board or the union constraining the improvement effort. Similarly, Governor Bill Clinton (1987) cites as an example a Coalition of Essential Schools high school in Arkansas that successfully negotiated an agreement with the Arkansas Department of Education to pursue its restructuring effort without conflicting with state standards. A word of warning: begin early to identify potential problem areas and to initiate the development of such agreements and support compacts. Rules and regulations are slow to change, and skeptics are slowly won.

Implementation Phase. The implementation phase represents the period during which the changes specified in the restructuring plan are actually put into place -- when the abstract vision is translated into a concrete reality. As Harvey and Hergert (1986) point out, "this is the period when **training and assistance** are particularly critical in order that those individuals involved acquire additional skills and modify current behavior" (p. 293; emphasis added). Equally important and obviously related is **staff development**, which, according to Fleming and Buckles (1987), can be "critical to the life of the plan" (p. 4).

Ongoing support is also an essential component of the implementation phase. Loucks-Horsley and Hergert suggest that one useful approach to providing such support can be found in the Peters and Waterman (1982) concept of "management by wandering around" (MBWA). They recommend that as team members practice MBWA, they look for such things as:

- use or nonuse of new practices and materials
- successful implementors

- teachers having trouble, and what the trouble is
- complaints and negative remarks, informal or voiced as jokes
- logistical problems; for instance, paper shortages, storage problems, needs for new kinds of space or equipment
- classroom management problems
- teacher-developed techniques that work (p. 52).

While their list is targeted toward school improvement efforts, it can be adopted and expanded in fairly obvious ways to be applicable to more massive restructuring efforts.

This is also the phase during which evaluation occurs, as do appropriate adjustments and refinements -- and sometimes even major shifts -- in direction, in the case of restructuring. Constantly monitoring progress is vital to the effort. Unfortunately, evaluation and assessment are generally considered to be threatening, resulting in a tendency to overlook shortcomings rather than making necessary adjustments on an ongoing basis. If restructuring is to be successful, everyone involved must recognize that it is a long-term commitment and that remarkable progress and accomplishments -- significantly raised achievement scores, for example -- in the first few years can be hoped for but are extremely unlikely to occur.

Given the long-term nature of restructuring, be prepared for an extensive, intensive implementation phase, requiring constant attention and vigilance. Fleming and Buckles (1987) suggest a number of strategies for "keeping the flame burning" including continuous staff development opportunities for staff successfully implementing the effort; regular progress reports and/or meetings; an active communications campaign to publicize successes and reward participation; and frequent replanning sessions. Pairing and sharing with another school undergoing similar activities will help offset the inevitable feeling that "I'm all alone out there" and "nobody could be having this much trouble."

A well-planned communications and public relations campaign is crucial to maintain and foster community and political interest and support as well as to enhance faculty and student morale.

Institutionalization Phase. Institutionalization -- making sure improvements stick -- is particularly important in school improvement efforts because this is the period during which the new practice or program finds a more stable place in the daily routine of the school and security as a line item in the budget. According to Miles (1983), institutionalization requires

> *strong attention of administrators to stabilizing and supporting the innovation, extending its use to a large group, and making provisions to protect the innovation against the threats of personnel turnover (p. 19).*

This is also the phase when the commitment of veteran staff is renewed, new staff are brought on board and trained, administrative support is ensured, community commitment is reinforced, etc. The focus is on **maintenance**, **renewal**, and **long-term survival**.

Restructuring requires a somewhat modified approach to institutionalization, differing from school improvement efforts substantially in the magnitude of what must ultimately find a stable and secure place in the redesigned school. It is likely that some staff will be involved in institutionalization-related activities and responsibilities while others on the restructuring team are busily engaged in implementing new aspects of the effort. That is, if the restructuring plan is developmental and incremental, innovations might be treated separately and in need of institutionalizing within differing appropriate timeframes.

If the restructuring effort is guided by a coherent vision but is implemented in stages and in an appropriate yet relatively rapid progression, both the implementation and the institutionalization phases can be made more manageable -- reinforcing the absolutely critical nature of beginning with a clear, shared vision and a well-defined, realistic restructuring plan simultaneously grounded in reality and idealism.

Conclusion

As we stated at the outset of this paper, our intention was to begin to answer some of the initial questions that faculty contemplating restructuring have asked. For us, this is only a beginning. We hope that we can work collaboratively with schools embarking on their own unique restructuring efforts and that together we can develop much more concrete answers to these questions, paving the way for later adventurers.

Toward this end, we welcome your comments on this paper and hope that you will agree to join with us and others in the Restructuring Schools Project to seek more fully developed answers and more colorful portraits of the schools of tomorrow.

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Appendix A

Below are included descriptions of ongoing restructuring efforts, including contact information for schools in Maine that are participating in these initiatives.

Coalition of Essential Schools

Between 1981 and 1984, the National Association of Secondary School Principals and the National Association of Independent Schools sponsored an extensive study of secondary education in the United States. Among the findings of this study are five imperatives for better schools:

- o teachers and students must be given room to work and learn in their own, appropriate ways;
- o students must clearly exhibit mastery of their school work;
- o students and teachers must receive the right incentives;
- o students' work must focus on the use of their minds; and
- o the structure of schools must be kept simple and flexible.

The Coalition of Essential Schools was established in 1984 as an extension of the 1981-1984 study of high schools and is intended to address the consequences of responding to these imperatives for better schools. As such, the Coalition is "devoted to strengthening the learning of students by reforming each school's priorities and simplifying its structure" (Coalition of Essential Schools Prospectus 1984 to 1994, p. 2).

The Coalition rejects the strategy of applying one specific model in order to ensure that schools respond to these imperatives, maintaining that "top-down standardized solutions to school problems" simply do not work and that the "heart of fine education is the constructive confrontation of able teachers and willing pupils" (p. 2).

To guide their restructuring efforts, Coalition schools each develop their own specific plan, grounded in a common set of principles, i.e.:

1. The school should focus on helping adolescents to learn to use their minds well. Schools should not attempt to be "comprehensive" if such a claim is made at the expense of the school's central intellectual purpose.
2. The school's goals should be simple: that each student master a

limited number of essential skills and areas of knowledge. While these skills and areas will, to varying degrees, reflect the traditional academic disciplines, the program's design should be shaped by the intellectual and imaginative powers and competencies that students need, rather than necessarily by "subjects" as conventionally defined. The aphorism "Less Is More" should dominate: curricular decisions should be guided by the aim of thorough student mastery and achievement rather than by an effort merely to "cover content."

3. **The school's goals should apply to all students**, while the means to these goals will vary as those students themselves vary. School practice should be tailor-made to meet the needs of every group or class of adolescents.

4. **Teaching and learning should be personalized** to the maximum feasible extent. Efforts should be directed toward a goal that no teacher have direct responsibility for more than eighty students. To capitalize on this personalization, decisions about the details of the course of study, the use of students' and teachers' time and the choice of teaching materials and specific pedagogies must be unreservedly placed in the hands of the principal and staff.

5. **The governing practical metaphor of the school should be student-as-worker**, rather than the more familiar metaphor of teacher-as-deliverer-of-instructional-services. Accordingly, a prominent pedagogy will be coaching, to provoke students to learn how to learn and thus teach themselves.

6. Students entering secondary school studies are those who can show competence in language and elementary mathematics. Students of traditional high school age but not yet at appropriate levels of competence to enter secondary school studies will be provided intensive remedial work to assist them quickly to meet these standards. **The diploma should be awarded upon a successful final demonstration of mastery** for graduation -- an "Exhibition." This Exhibition by the student of his or her grasp of the central skills and knowledge of the school's program may be jointly administered by the faculty and by higher authorities. As the diploma is awarded when earned, the school's program proceeds with no strict age grading and with no system of "credits earned" by "time spent" in class. The emphasis is on the students' demonstration that they can do important things.

7. The tone of the school should explicitly and self-consciously stress values of **unanxious expectation** ("I won't threaten you but I expect much of you"), of **trust** (until abused) and of **decency** (the values of fairness, generosity, and tolerance). Incentives appropriate to the school's particular students and teachers should be emphasized, and

parents should be treated as essential collaborators.

8. The principal and teachers should perceive themselves as generalists first (teachers and scholars in general education) and specialists second (experts in but one particular discipline). Staff should expect multiple obligations (teacher-counselor-manager) and a sense of commitment to the entire school.

9. Ultimate administrative and budget targets should include, in addition to total student loads per teacher of eighty or fewer pupils, substantial time for collective planning by teachers, competitive salaries for staff, and an ultimate per pupil cost not to exceed that at traditional schools by more than ten percent. To accomplish this, administrative plans may have to show the phased reduction or elimination of some services now provided students in many traditional comprehensive secondary schools (Coalition of Effective Schools Prospectus 1984 to 1994, pp. 4-6).

While this set of principles does not paint a portrait of what the restructured school should look like, it clearly suggests substantial changes in what currently exists -- in curriculum, instruction, organization and management, staff responsibilities, and so forth.

The Coalition currently includes a variety of schools spread across the United States, each of which reflects its commitment to these principles in its own unique way. Portland High School provides one example of the way in which a Maine school has responded to the Coalition's principles and imperatives for better schooling. To learn more about the Portland restructuring effort, contact:

Barbara Anderson, Principal
Portland High School
284 Cumberland Avenue
Portland, Maine 04101
207-775-5631

National Network for Educational Renewal

The National Network for Educational Reform also grew out of one of the major studies of education that occurred during the first wave of education reforms of the 1980s -- John Goodlad's Study of Schooling. The study spanned eight years and involved 38 elementary, junior, and senior high schools and included data from 8,624 parents, 1,350 teachers, and 17,163 students; over 1,000 classrooms were observed. In the preface of his book, A Place Called School: Prospects for the Future (1983), Goodlad states his underlying assumption in conducting the study: that "significant educational improvement of schooling, not mere tinkering, requires that we focus on entire schools, not just teachers or principals or curricula or organization or school-community relations but all of these and more."

It is this assumption that guided the study as well as the findings that it ultimately generated. It is also this belief in the need to look beyond what currently exists -- to restructure our schools -- that Goodlad reinforces with his readers at the conclusion of his book, i.e.:

> *Readers who left us in earlier chapters may have been discouraged over the gap between their conceptions of what education is and what many of the schools studied appeared to provide. I hope that those who continued began to see with me the possibilities for reconstructing schools . . . Whatever our individual experiences with a place called school, to think seriously about education conjures up intriguing possibilities both for schooling and a way of life as yet scarcely tried. And, indeed, education is as yet something more envisioned than practiced (p. 361).*

The National Network for Educational Renewal is an outgrowth of the Goodlad study and is a reflection of many of its findings and recommendations, including the contention that many aspects of our current approach to schooling must be redesigned. Network schools are supported by university-school partnerships, based on one of the Goodlad reform themes to use such partnerships in their improvement/restructuring efforts.

Building-based accountability is a common theme of the schools with an emphasis on providing a general education for all students. Many aspects of schooling are being rethought, including school size, entrance age of children, curriculum, school organization, instruction (e.g.,the use of teams of teachers to teach non-graded groups of students), and so forth.

Examples of Maine schools participating in the National Network for Educational Renewal include the Junior High of the Kennebunks, Narragansett School, and New Suncook Elementary. To learn more about the ways in which these schools are restructuring, contact:

Sandra Caldwell, Principal
Junior High of the Kennebunks
87 Fletcher Street
Kennebunk, Maine 04043
207-985-2912

Cynthia Oshea, Principal
Narragansett School
284 Main Street
Gorham, Maine 04038
207-839-5561

Gary MacDonald, Principal
New Suncook Elementary School
Route 5, Box H
Lovell, Maine 04051
207-925-2735

NEA Mastery in Learning Project Schools

The National Education Association's Mastery in Learning Project involves twenty-seven elementary, junior, and senior high schools throughout the United States. The project is "based on research that helps faculty restructure schools so that students can master what is taught."

Similar to the other two above-discussed restructuring efforts, the NEA project is committed both to building-based change and to the notion that there is no one, right model of the ideal restructured school. Instead, the project maintains that schools must be structured differently to accommodate the students and community context.

Nevertheless, the Mastery in Learning schools are guided in their restructuring efforts by four essential assumptions about educational excellence, i.e.:

- A school's curriculum must have content integrity and social significance. Students currently encounter a range of curricula so broad that they often acquire only surface skills and understandings during their school experience. This needn't be the case. A wisely selected, properly organized, and effectively taught course of study can do far more than impart minimum, basic skills and understandings. An effective curriculum empowers learners now and for the rest of their lives.

- A school community must hold high expectations for its students. Achievement is closely related to how parents, teachers, and other adults perceive a student's abilities. New understandings about teaching and learning have emphasized the importance of high expectations to individual success in school.

- The central priorities of schools -- learning, teaching, curriculum -- must guide all other educational decisions. Determinations about instructional materials, faculty deployment, course organization, and student schedules should follow -- not determine -- basic decisions about learning.

- Every decision about learning and instruction that can be made by a local school faculty must be made by that faculty. Teachers know what individual students need to succeed better than any decision-makers who are far removed from the classroom. To make quality decisions

> about learning, teachers need access to the latest research findings, not mandates from above. And when a school community makes its own decisions, these decisions will be effectively and enthusiastically implemented because they are owned by the community (The Mastery in Learning Project, pp. 2-3).

Similar to the principles of the Coalition of Essential Schools, these assumptions do not dictate what a Mastery in Learning school will look like. Nevertheless, to enact them requires substantial changes in the organization and operation of the typical American school.

Each school must agree to progress through four specific steps if it is to participate in the project. First, a school profile must be developed, describing the school's academic program, student attitudes and aptitudes, instructional styles, and so forth. Second, the faculty establishes its priorities for teaching, school climate, curriculum, and overall learning. Third, the staff examine research-based approaches to the organization of curriculum, teaching, and learning within the context of the priorities they established, using the project's TRaK (Teaching Resources and Knowledge) data base. And finally, staff develop, evaluate, refine, and implement a plan focusing on "high, relevant standards for students," based on current knowledge about curriculum, teaching, and learning.

Wells Junior High represents Maine in the NEA Mastery in Learning Project. To learn more about the school's involvement in the project and the changes it is implementing, contact:

Robert Hasson, K-8 Principal
Wells Junior High
Route 1, Post Road
Wells, Maine 04090
207-646-5142

The Holmes Group and the Task Force on Teaching as a Profession

The three examples discussed above all focus on the entire school, recommending necessary structural changes in a variety of aspects of the educational enterprise. In contrast, The Holmes Group and the Task Force on Teaching as a Profession -- both of which have received considerable publicity during the last year -- have a narrower mission, concentrating on the profession of teaching and the changes that must occur if excellence in education is to become a reality.

The Holmes Group is a consortium of education deans from leading research universities throughout the country. The overarching goals of the consortium are to reform teacher education and to reform the teaching profession. More specifically, in its recent report, Tomorrow's Teachers (1986), the authors state their goals as:

38

- to make the education of teachers intellectually more solid;
- to recognize differences in teachers' knowledge, skill, and commitment, in their education, certification, and work;
- to create standards of entry to the profession -- examinations and educational requirements -- that are professionally relevant and intellectually defensible;
- to connect our own institutions to schools; and
- to make schools better places for teachers to work and learn.

Their recommendations involve a major restructuring of both teacher education at the university level and the teaching profession at the building level. For example, in their discussion of differences in teachers' knowledge, skill, and commitment, The Holmes Group members propose a radical shift in the teaching profession, i.e.:

> *The Holmes Group commits itself to the development of a differentiated structure at three levels: the Career Professional Teacher, who would be capable of assuming responsibility not only within the classroom but also at the school level; the Professional Teacher, who would be prepared as a fully autonomous professional in the classroom; and the Instructor, who would be prepared to deliver instruction under the supervision of a Career Professional Teacher (p. 65).*

Similar to the National Network for Educational Renewal, The Holmes Group also emphasizes the importance of university-school partnerships as a means toward improving education -- both university-based education and school-based education. They also propose a new concept -- Professional Development Schools. According to the report,

> *these Professional Development Schools, analogous to teaching hospitals in the medical profession, will bring practicing teachers and administrators together with university faculty in partnerships ... (and) will serve as settings for teaching professionals to test different instructional arrangements, for novice teachers and researchers to work under the guidance of gifted practitioners, for the exchange of professional knowledge between university faculty and practitioners, and for the development of new structures designed around the demand of a new profession (p. 67).*

While The Holmes Group did not focus on restructuring schools, the report concludes with a clear statement about the need to move forward in these efforts and its commitment to support them, i.e.:

> *The existing structure of schools, the current working conditions of*

> *teachers, and the current division of authority between administrators and teachers are seriously out of step with the requirements of the new profession. If the construction of a genuine profession of teaching is to succeed, schools will have to change (p. 67).*

The fourteen-member Task Force on Teaching as a Profession, funded by the Carnegie Forum on Education and the Economy, had a focus similar to The Holmes Group. In their report, A Nation Prepared: Teachers for the 21st Century (1986), the Task Force called for major changes in education policy to:

- Create a National Board for Professional Teaching Standards, organized with a regional and state membership structure, to establish high standards for what teachers need to know and be able to do, and to certify teachers who meet that standard.
- Restructure schools to provide a professional environment for teaching, freeing them to decide how best to meet state and local goals for children while holding them accountable for student progress.
- Restructure the teaching force, and introduce a new category of Lead Teachers with the proven ability to provide active leadership in the redesign of the schools and in helping their colleagues to uphold high standards of learning and teaching.
- Require a bachelors degree in the arts and sciences as a prerequisite for the professional study of teaching.
- Develop a new professional curriculum in graduate schools of education leading to a Master in Teaching degree, based on systematic knowledge of teaching and including internships and residencies in the schools.
- Mobilize the nation's resources to prepare minority youngsters for teaching careers.
- Relate incentives for teachers to school-wide student performance, and provide schools with the technology, services, and staff essential to teacher productivity.
- Make teachers' salaries and career opportunities competitive with those in other professions (pp. 2-3).

Also similar to The Holmes Group, the Task Force recommendations are being followed up with concrete efforts to implement them across the country. The Carnegie Corporation has awarded a grant to Stanford University to develop prototype assessments that might be used by the proposed National Board for Professional Teaching Standards to certify teachers. Carnegie has also indicated a willingness to fund the costs of planning and starting the actual Board. At the state level, Connecticut and California are planning a joint venture that would allow them to develop new teacher assessment procedures in at least twenty-five subjects areas by 1990.

In addition to The Holmes Group and the Task Force on Teaching as a Profession, there are a variety of other efforts across the country also designed to rethink and restructure the teaching profession. The Rochester, New York, public schools provide an excellent example of a system-wide approach to restructuring the profession. In a much publicized contract agreement, Rochester recently established significant pay increases for teachers, with "lead" teachers earning up to $70,000 in the third year of the contract. The concept of a "lead" teacher is but one aspect of a sweeping restructuring of teaching. The Peer Assistance and Review Program (PAR) plays an important role in this overall effort and "involves teachers in monitoring quality within their own ranks by providing mentors to inexperienced teachers and offering assistance to experienced teachers whose performance should be improved" (Urbanski, 1987, p. 32). Paralleling the PAR program is the Career in Teaching program that provides for four levels of teaching -- intern, resident, professional, and lead -- and enables teachers to "assume leadership in matters relating to instruction and to the profession" (p. 32). A school-based planning process is used to assure shared governance of each school.

Appendix B

As noted in the text, we have made use of a number of resources on school improvement to inform the development of this paper.

We suggest in particular:

1. An Action Guide to School Improvement by Susan Loucks-Horsley and Leslie F. Hergert (1985)

2. Implementing School Improvement Plans: A Directory of Research-Based Tools by Douglas Fleming and Cecilia Buckles (1987)

3. A Roadmap for School Improvement by David P. Crandall and Susan Loucks-Horsley (1983)

4. "Strategic Planning Issues that Bear on the Success of School Improvement Efforts" by David P. Crandall, Jeffrey Eiseman, and Karen Seashore Louis (1986)

5. Research-based Tools for Bringing about Successful School Improvement by the Southwest Educational Development Laboratory (1986)

6. "Unraveling the Mystery of Institutionalization" by Matthew Miles (1983). Reprinted in Ensuring Success: Good News from a Study of School Improvement, Susan Loucks (Ed.)

7. Dimensions of Effective Leadership by P.C. Duttweiler and S.M. Hord (1987)

8. The Meaning of Educational Change by Michael Fullan (1982)

9. Innovation Up Close by Michael Huberman and Matthew Miles (1984)

For additional information, see the reference list following the main body of the text, pages 21-23.

Items #1 - #6 may be purchased through The Regional Laboratory; items #7 - #9 are available from their publishers.

TOWARD A DEFINITION OF RESTRUCTURING

Jill A. Mirman
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TOWARD A DEFINITION OF RESTRUCTURING

In his column of March 9, 1988, Albert Shanker said that "everyone seems to agree our schools need 'restructuring', [but]... watch out. You can be pretty sure that when there is such easy and universal agreement, there is not real agreement at all. It's just that 'restructuring' has become a fashionable word...and means just what each person wants it to mean."

As Massachusetts educators take up the challenge of "the second wave of school reform," it is important that we share an understanding of what restructuring means. Many resources attempt to define what restructuring is and how to go about it. The purpose of this brief paper is to summarize some of them and to provoke thought and discussion among participants at the "New Structures/New Roles" conference presented by the Massachusetts Department of Education.

It begins by discussing restructuring as part of the education reform movement, then explores themes common to current restructuring efforts and presents a framework for approaching far-reaching goals.

Any school or district considering restructuring will want to look beyond this brief treatment; some helpful resources are included in the bibliography.

The Challenge of the Second Wave

In the first wave of educational reform, most efforts were characterized by trying to improve upon what was already being done. We identified what we thought education should be and added more of it. In Massachusetts, through programs such as Horace Mann Grants and Lucretia Crocker Fellowships, incentives and support have been provided for worthwhile activities related to staff development, curriculum, and instruction, to name a few, and people have been rewarded for taking initiative in developing creative programs.

These efforts have laid an important foundation for the second wave. This next wave has evolved from the needs of a rapidly changing economy and society that call for fundamental changes in organization, structure, management, curriculum, and instruction. Since the structure of schools has changed little in the last century, our ability to imagine a structure vastly different from anything we have ever known -- a structure suited to our rapidly changing world -- presents a real challenge.

Responding to a New Age

Whether or not past adjustments in our educational system have been adequate to respond to changes in our society is open to debate, but there is broad sentiment that the magnitude of the changes we will encounter in our immediate future will not be well served by merely tinkering with schools. As Harvey and Crandall stress in citing Larry Hutchins, "the current structure of American schools is... 'not sufficiently powerful to meet the needs of students who will live and work in the 21st century'." (Harvey & Crandall, 1988)

Today we face the convergence of several economic and societal trends to which we can only respond in dramatic ways. The population of students in most schools is changing; the population and availability of teachers is changing; and the national and world economy is changing.

We have a legal and societal commitment to provide equal educational opportunity to all children -- a goal of which this country is very proud. But that "all" is going to be defined by a drastically different population of students than we have ever known. More and more, this population will be characterized by children who are poor, who do not speak English, and who have physical, emotional, and developmental handicaps (Hodgkinson, 1988).

At the same time that our student minority population is becoming the majority, the number of minority teachers is declining. We are already experiencing shortages in areas where teachers will be needed the most, such as bilingual education.

These demographic changes are happening in a context of global economic changes that are redefining what we should teach in schools. Our educational goals are shifting from the transmittal of factual knowledge to the development of higher order thinking abilities. The evolution of the Information Age means that in order to prepare children to be responsible citizens, we must teach them to be life-long learners, communicators, and problem solvers.

Although an oversimplification, it may help to summarize the confluence of these trends in a "formula" that illustrates why we must set about re-forming the very structure of our schools:

> Demographic Changes (whom we teach and who teaches) + Economic and Social Changes (defining what we teach) = Structural Changes (how we teach).

Some Common Themes of Restructuring Efforts

There is no one right way to restructure a school. Each restructured school will grow out of a vision created to reflect the realities of the community it serves (Harvey & Crandall, 1988). There are, however, common themes that emerge from the literature on restructuring and from current restructuring efforts, such as those that are being presented at this conference. A brief description of some of these themes follows:

1. School goals and activities designed to meet the needs of all students. Much instruction has become separated into arbitrary knowledge bits for reasons that relate more to logistical scheduling and product-oriented accountability than to the service of children. The systematic fragmentation of what and how we teach has contributed to the failure of many children (Eisner, 1988) and to denying particularly disadvantaged children access to valuable, rich knowledge (Goodlad & Oakes, 1988).

   Some schools are recognizing that the needs of students can best be served by an educational program that is coherent, both in its content and delivery. Instruction that is meaningful in the context of all that is being learned and relevant to real life situations is particularly important for at risk students who traditionally have problems making connections between in and out of school experiences (Mirman, Swartz & Barell, 1988).

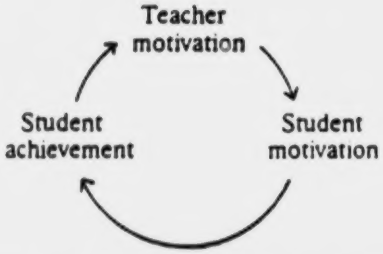
New standards are being set that convey high expectations for students and adults. Underlying approaches to teaching and learning is the belief that all children can learn and can make a contribution to the learning of others.

2. Active involvement of all constituencies in the school community. Traditional tensions between schools and communities, with community as taxpayer and school as producer, are out-dated and dangerous. Restructuring efforts are casting schools as the center of their communities, reflecting community goals and involvement. There is much encouragement for the establishment of a building-level, multiconstituent team to be responsible for assessing, planning, and implementing changes in the school (Harvey & Crandall, 1988).

   Long overdue alliances with parents are being forged, where their involvement in their children's education is legitimate and welcomed. Businesses and other community partners are finding that they have important contributions to make to their schools and that schools can offer benefits in return. For some Massachusetts schools, School Improvement Councils represent a model of school personnel and citizens working together for positive change.

3. Humanization of the organizational climate. Educators choose their profession because of the human element. It is a people business (Combs, 1988). And yet, many children and adults characterize schools as impersonal, isolating, alienating places to work and learn. A new, personalized climate permeates restructured schools. There is a sense of caring and belonging that extends to all children and adults as well as to the larger school community. Codes of high expectations, respect, and dignity promote feelings of ownership and shared responsibility in all that the school does. Kohlberg's (1974) study of "just communities" illustrates that when people affected by school policies and rules have a say in their formulation, an atmosphere of trust and fairness is created.

   A nurturing climate has a direct impact on the quality of teachers' work life and on student achievement. Various studies indicate that teachers' motivation and sense of efficacy is directly connected to student achievement (Lieberman, 1986; Brophy & Good, 1984). A healthy school environment propels a cycle in which high teacher motivation inspires student motivation, which leads to student achievement, and in turn leads to teacher motivation, and so on.



4. Good thinking pervades the classroom and the school. We say we are committed to integrating the teaching of thinking into the curriculum, but

our vision far exceeds current practice. Subject matters are taught without connection to broader world contexts or to other knowledge that students have obtained, and most students remain passive consumers of knowledge instead of becoming engaged creators of it. A great challenge for schools is making learning more meaningful and relevant (Eisner, 1988; Goodlad & Oakes, 1988).

As one who has inspired much attention to restructuring, Marc Tucker (1988) of the Carnegie Forum on Education and the Economy, has gone so far as to say,

> The purpose of restructuring our schools is to create organizations capable of vastly increasing students' higher-order thinking skills. That is why schools need to be places where ideas have currency, why they need to be staffed by people who are comfortable with ideas, and why they must be redesigned so that such people can be as productive as possible.

Tucker points out that, as people are planning restructuring efforts, thinking should be considered, not only as part of the change in pedagogical practice, but in the very way educators conceive of their work. In the "thinking school," good thinking is a code of performance that is born out in teaching, learning, and managing the school.

5. Responsibility for leadership of the school is shared. The movement to "professionalize" teaching has emerged, in part, from teachers' feelings of powerlessness over decisions affecting them and their students. A major focus of restructuring is to explore ways of engaging the people, who are held accountable for education in making decisions about teaching and learning and school-wide policies. For most efforts, this will mean redefining the roles and responsibilities of teachers and, perhaps, others. Some efforts engage a "coalition of leaders" (Kantor, 1983) that is comprised of teachers and administrators and may also include students, parents, and other community members to take "collective responsibility" (Lieberman, 1987) for decisions about the goals and activities of the school.

   Sharing leadership and ownership of what goes on in the school signifies a new view of power. Whereas the exercising of traditional power meant control by a single leader, this "new power" is expressed by mobilizing different stakeholders to collaborate on achieving a common vision. This mobilization can best be obtained by leaders who recognize that major changes pose legitimate threats to people in the school community, and that people's resistance is best dealt with by responding to their concerns, rather that trying to "enforce change."

6. Relationships between schools and higher education institutions link research and development with practice. Of the many linkages that restructuring suggest, those with universities and colleges are key and are being modeled in our state through Professional Development Schools and other vehicles. These relationships can provide school practitioners with access to research and knowledge bases on various aspects of school improvement and organizational change and provide

potential practitioners and teacher educators with access to a living laboratory.

In restructuring efforts, there is the acknowledgement that pre-service and in-service training are not two distinct parts of teacher education but phases in an ongoing process of development. These connections promote the continual growth of teachers and the revitalization of the profession through mentoring opportunities, teacher-as-researcher programs, and teachers being adjunct faculty, to name a few. These opportunities help to provide the ongoing support that is crucial to effective teachers throughout their careers (Loucks-Horsley, Harding, Arbuckle, Murray, Dubea & Williams, 1987).

7. Desired changes and successes are publicized throughout the school community. Dramatic changes in schools necessitate broad constituent support. The representative team that leads a restructuring effort will want to keep the immediate and larger school community aware of the mission, goals, and high standards that drive their actions. Community members who are involved in the challenges the school faces will be eager to recognize and reward success and communicate the school's achievements to others (Anderson & Cox, 1988).

Comfort in Numbers and a Framework for Taking Action

It is apparent that restructuring requires juggling many changes at once and building a system that is flexible and powerful enough to be responsive to the inevitable changes of the coming century. To many, the task seems Herculean.

This conference aims to relieve some anxiety about the road ahead by providing concrete models and examples from which we can learn, practical activities and strategies that can stimulate our energy and creativity in applying ideas to our own settings, and networking opportunities with others who share our goals and dilemmas.

Eisner (1988) offers a framework for thinking about change that may be helpful. It is simplified here in order to offer a jumping off place for considering school-wide restructuring. He says that there are five dimensions to the process of institutional change: intentions, structure, curriculum, pedagogy, and evaluation.

We all start with good intentions. We are in the education business because we are motivated by our resolve to help children. But having good intentions is not enough; they must be supported by the other four dimensions. The organizational structure is what allows the intentions to be actualized. The curriculum is the plan for putting the intentions into action; it is the program of instruction for the students. The pedagogy is the implementation of the plan. The evaluation tells us if we realize our good intentions or not.

Perhaps it is reassuring to see an overwhelming task broken down into these factors. Many of the resources listed in the bibliography provide concrete ideas about how to implement a process of institutional change and how to get started on restructuring.

We hope the collection of ideas in this paper and those that will be presented at the conference inspire imagination and optimism about our success in these efforts.

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Design As The Missing Piece In Education

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The Need For Design

America needs new schools, schools that will meet the requirements of the twenty-first century. Today's schools, the old schools, graduate only 75 percent of the nation's youth and educate poorly many who do graduate.

The problem does not rest with today's teachers, administrators or school board members. It rests with the design of the current system. The shape of that design was outlined as early as the 1830's; it was modified again at the turn of the twentieth century and reached its final form in the creation of the comprehensive high schools in the 1950s. The old design worked relatively well for the society it served: It brought schooling to millions of immigrants whose skills and conformity were needed to stoke the engines of the industrial society. Today's society no longer requires such a work force. We need people who can think and solve problems creatively, using technology and information. The current design does not even serve the middle class well. As long as students attend school most of the time, complete most of their assignments and do not act up too often, they earn their twenty-one Carnegie units and graduate from school--bored, turned off and without the prospect of achieving the standard of living that their parents expected and largely got.

The problem isn't teachers who are poorly trained, underpaid, overworked or burned out. The problem isn't the administrators who are expected to play by rules they didn't establish, defend the system at all cost and, above all, "keep the lid on." The problem isn't the board members who know the system isn't working well for a large majority of students but don't know how to fix the problem and are given policy making tools that are inadequate for the situation.

The problem is a school design that demands conformity, does out knowledge like peanuts to a monkey and acts as a socioeconomic sorting system by depending heavily on family background for student success. We need a new design for schools if the challenges of the environment, energy, technology, entrepreneurialism, social justice and international cooperation and the other pervasive issues of the twenty-first century are to be met.

The reforms that have been proposed are only bandaides on the old design. For example, lengthening the school day won't do anything more than cost more money when barely 25 percent of the typical school day is spent with students learning successfully. Testing teachers won't make any difference if they weren't taught well in the first place. Paying teachers more won't make any difference if they don't have new strategies for reaching students at risk. Tightening standards for students and testing them won't make any difference if the standards and the test are irrelevant to the requirements of the twenty-first century.

Redesiging the system is the only solution.

What Is Design?

Design is a specific discipline focused on "human activity systems." Specific steps in the process include:

1. Identifying environmental trends that lay out the requirements for education. This process closely resembles key steps in the management tool of strategic planning.

2. Identifying a knowledge base that reflects 21st century concepts and issues. The issue is not how many years of a particular subject a student has taken, but the relevant knowledge he or she has acquired and the fit that knowledge has with the needs of the future.

3. Identifying the student outcomes that a redesigned school should produce. This process draws on "outcomes-based education," but focuses explicitly on higher-order thinking skills as well as the learning-to-learn and personal development goals students need to succeed in the twenty-first century.

4. Using a "general systems" model to define the key components of a new design. This step pulls the designer away from the conventions of the present design so that he/she can think creatively about other configurations for schooling.

5. Identifying the "learning level" as the "Primary subsystem level." The design of today's schools focuses on the management and instructional levels of the educational system. Refocusing on the learning level and using knowledge from research on cognition as a basis for understanding how people learn casts an entirely different perspective on how the schooling process should be redesigned.

6. Developing a long-range plan that creates a "paradigm shift" for teachers and principals but also leads to cautious, long-term inquiry into the design of new schools.

What Would A New Design Look Like?

Unique conditions in each community dictate that no two schools look alike. But some characteristics are probable:

- A new curriculum that focuses on the pervasive issues of the future such as: energy, ecology, technology, entrepreneurialism, social justice, international competition and cooperation.

- New instructional methods that turn passive learning into active learning, putting more responsibility on the student for learning and putting the teacher in the role of helping students consciously learn how to learn, set goals, work cooperatively and think.

- New instructional materials that de-emphasize the use of the pre-digested information found in textbooks and put emphasis on helping students learn how to search for and organize information from a variety of resources, including those from the community and those from information systems and the use of communication and data-based technologies.

Is Re-Design Too Radical?

Design is a natural, historical occurrence in American education. For example, in the 1830's, Horace Mann, responding to the needs of the moneyed class of Massachusetts, adopted methods of schooling to insure that the new immigrants did not threaten the rights of the establishment. His methods included the introduction of compulsory education to insure that students where removed from what he called the "immoral" environment of the immigrants' families, the use of lecture and seatwork that kept educational costs down and insured that students learned how to compliantly follow orders, and the textbook that controlled what they could read. Half a century later, Charles Eliot, the President of Harvard, created the "Committee of Ten" who argued that the curriculum of the time (Latin, classical literature, rhetoric, natural philosophy and natural history) was irrelevant to the twentieth century. The committee recommended, instead, a "modern" curriculum that included four years of English, three of social science and two of science, mathematics and a foreign language. In the 1950's James Conant, also a Harvard president, advocated the introduction of management models based on those of the industrial society. The result was the "comprehensive high school" that was based on the philosophy that bigger was better and a top-down management structure would insure greater uniformity in meeting the needs of the American economy. It is time for a new design, one undertaken more systematically that in the past and based on wide-scale participation of the stakeholders in American education.

Will Design Occur Naturally?

Arguing for change is a lonely, risky business. Unless it is approached from a tops-down point of view, it is not likely to occur without a network of people and organizations dedicated to redesign. Such a network must provide:

Processes of design that can be replicated
Access to examples of redesign
Support to the risk takers
Communication of the result of design to others

An Outside-In Approach to Design Inquiry in Education

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> "You see things as they are and ask: WHY? But I dream things that never were and ask: WHY NOT?" (A quotation from George Bernard Shaw)

Introduction: Improvement or Transformation

The ship of education is sailing on troubled waters. One national report after another highlights the current "crisis" of a "nation at risk," pointing out dangerous currents and menancing shoals. The host of reports prescribe corrections we should make -- remedies for fixing education. Whatever terms are used -- reform, restructure, or renew -- these represent an inside-out approach to inquiry. That is, the recommendations focus on making adjustments or improvements in the existing system, rather than creating a new one. Few of these analyses recognize the complexity of current issues and circumstances that surround education, and even fewer have grappled with the implications of education as a societal system, interacting with other societal systems, embedded in the rapidly, and dynamically changing larger society.

What is most troublesome to some of us is that we are pouring tremendous effort and resources into the fragmented and piecemeal improvement of the current system -- a system that should not exist anymore. Rephrasing Bernard Shaw -- rather than asking lots of questions about what's wrong with what we now have, we should dream of kinds of education that never were.

Around the middle of the twentieth century, we entered the postindustrial information age, a new stage in the human evolution. This new age requires new thinking, new perspectives, and a new vision of education. Improving our educational system, which is still grounded in the industrial revolution of the late nineteenth century, will not do in this postindustrial information society. What we need is a new image of education attained by a broad sweep of a comprehensive transformation -- a metamorphosis.

My intent in this paper is to explore such a transformation. This exploration does not offer a prescription, but sets forth suggestions on fresh ways of thinking about education. It offers organizing perspectives that can guide such thinking. It proposes new points of view that conceive of education as a complex, purpose-seeking system, coevolving with its dynamically changing societal environment. It formulates fresh parameters for a new system of education and introduces a set of strategies for designing the new system.

A System of Problems in Organizational Inquiry in Education

A system of problems in organizational inquiry in education has four main sources: (1) the fragmented, discipline-by-discipline-based approach to the study of education, (2) the still-prevailing reductionist mode of inquiry, (3) the piecemeal efforts of "disjointed incrementalism" in educational improvement, and -- most significantly -- (4) the existence of a gap between overall societal evolution and the evolution of education. In contrast to the four macroproblems proposed here, the current "crisis" literature and the numerous national reports set forth myriad "micro" problems, without connecting them into a systemic pattern of relationships or embedding them into the context of overall societal development.

The Fragmented Study of Education

The fragmented and disconnected view -- prominent in studying and understanding education -- is inherent in the prevailing approach to social-systems inquiry. This approach depends on scholarship in a variety of disciplines that can only provide partial interpretations of societal systems and sets forth descriptions based on disparate theoretical frameworks. For example, in education, we study the sociology of the classroom, the psychology of instruction, the economics of education, and the politics of governance. This is much like the parable of a group of blind men trying to describe an elephant. Compartmentalized inquiry combined with the use of widely differing orientations, methods, and languages from separate disciplines results in unintegrated and incomplete knowledge and characterization. Thus, the theoretical frameworks currently used in educational inquiry cannot depict education as a total system. Usually each view addresses only a narrow aspect or a small number of variables, often arbitrarily selected. This tends to disregard complex interactions and systemic connectedness involving multiple and dynamically interacting functions and components. Such theoretical orientations hold little promise of offering useful approaches and strategies for reconceptualizing and purposefully redesigning education.

Traditional Scientific Inquiry Still Prevails

Inspired by the Cartesian-Newtonian scientific world view, disciplined inquiry during the last three hundred years sought understanding by taking things apart, seeking the "ultimate" part, and groping to see the whole by viewing the characteristics of its parts. Implicit in this approach is an exclusive commitment to defining elementary cause and effect relationships, which led to a deterministic perception of the world. The outcome of these perspectives was best manifested in the Industrial Revolution, and its essential characteristics were derived from analytic thinking, reductionism, and determinism.

The new scientific orientation that has emerged along with the postindustrial-information society over the last three to four decades has been illuminated by Heisenberg's principle of "uncertainty," Bohn's "wholeness and the implicate order," Bertalanffy's general theory of systems, Miller's living systems theory, Boulding's ecodynamics, and Prigogine's concepts of irreversibility and dissipative structures. In the recent educational literature, a compendium edited by Y.P. Lincoln explained this new view as the "Paradigm Revolution." Tofflin's Third Wave, Ferguson's Aquarian Conspiracy, and Capra's The Turning Point highlight this revolution as a major shift towards synthesis, expansionism, indeterminism, emergence, and a systemic-ecological world view.

Given this remarkable paradigm shift in disciplined inquiry, it is surprising to see that doctoral dissertations in education as well as the inquiries of the educational research community are still dominated by controlled reductionist experiments, seeking to apply quantitative measures (that limit the scope of inquiry) and deterministic models that cannot cope with complexity, purpose, intention, uncertainty, ambiguity, and the ever-accelerating dynamic changes in the larger societal environment.

Piecemeal Approach to Improvement

A third example of the problems within educational inquiry show up in the area of educational improvement. The efforts to change and improve education during the last two to three decades -- with increasing intensity and urgency more recently -- clearly represent the same part-oriented, fragmented view described above. As a rule we have tried to improve educational systems from the inside-out, without considering the total system itself and the larger societal system in which education is embedded. A host of these improvement efforts demonstrate "disjointed incrementalism" and unintegrated, part-focused piecemeal tinkering. The results of years of research and development in education fill whole libraries, yet the metaphor is that of a warehouse full of vehicle parts that do not fit into a whole. No blueprint for integrating the parts exists. The myriad educational improvement programs and products do not "map" into the system we call education or into the larger societal system.

The Existence of an Evolutionary Gap

The three components of the problematique -- described above -- confront us with a powerful challenge. But beyond this challenge, is an even larger "meta issue": the existence of a dangerous evolutionary gap -- a discrepancy between the recently emerged new societal image and the still-prevailing outdated image of education.

Summatively, the problematique I described above and this gap or discrepancy suggest to me that the crisis in education today is more than a "crisis of performance"; it is a "crisis of perception." The main source of the current crisis of performance is a lack of perception and vision of what could be and what should be the function, the substance, and the form of education in the postindustrial information society.

New and Different Questions

Investigations over the last several years have probed the adequacy of educational systems from the inside, with such questions as:

What is wrong with the system?

How can we improve it?

How can it be made more efficient and cost-effective?

How can we provide more instructional time?

How can we improve teacher performance?

Questions like these might be appropriate in times of relative stability, when adjustments and piecemal improvements to an existing system could bring it in line with slight shifts in the environment. However, in times of turbulence, accelerating and dynamic environmental changes, and discontinuity that characterize the current era, when a new, very different stage in societal evolution is unfolding, it is time -- if any time remains -- to ask new and different questions, such as:

What is the nature and what are the characteristics of the current postindustrial information age?

What are the educational implications of those characteristics?

What might be the role of education at this new stage of societal evolution?

What new challenges, opportunities, and resources are offered?

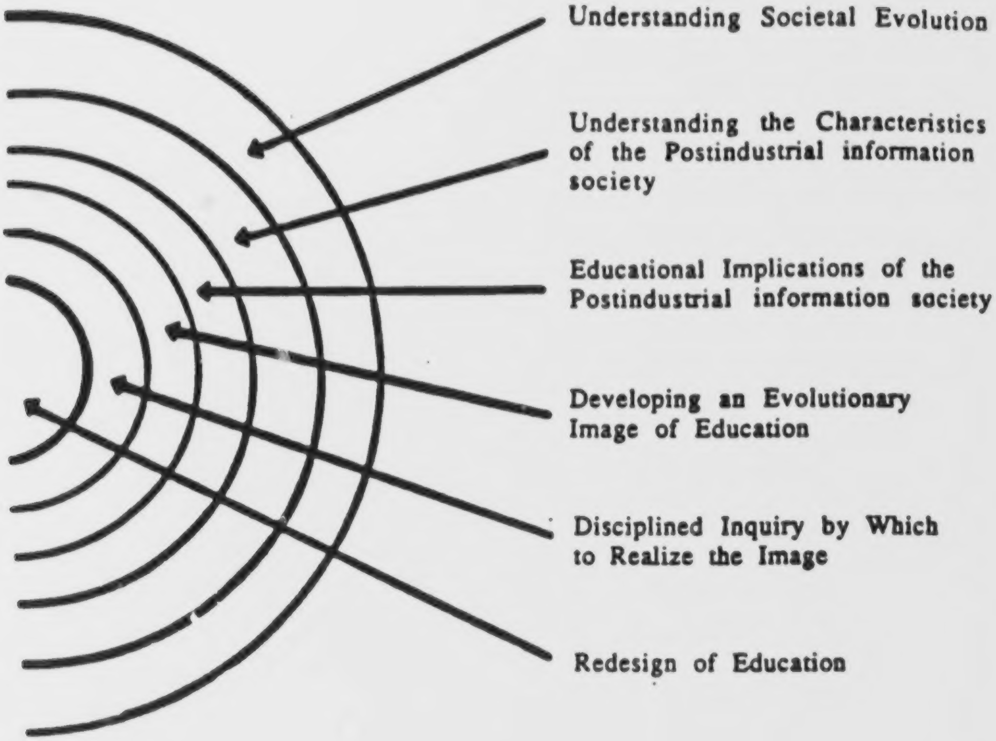
What new vision or image is emerging that might guide the evolution of learning and human development systems?

What kind of inquiry and what strategies will enable us to realize and implement that image?

Clearly, these are very different questions from those we are asking today. These new questions shift the direction of the exploration from the Inside-Out approach to an Outside-In mode of inquiry and represent a trust for the transformation of education and the creation of new systems of learning and human development. Figure 1 presents an image of this Outside-In exploration.

Figure 1

An Image of the Outside-In Approach


Understanding Societal Evolution
Understanding the Characteristics of the Postindustrial information society
Educational Implications of the Postindustrial information society
Developing an Evolutionary Image of Education
Disciplined Inquiry by Which to Realize the Image
Redesign of Education

The outer circle of the figure stands for an inquiry to gain an evolutionary perspective and develop and understanding of societal evolution as the appropriate context for the evolution of education. Having gained an evolutionary perspective, we shall then explore the characteristics of the postindustrial information age in order to gain insight into what kind of society is now unfolding and thus what the functional systemic environment of education is. Understanding those characteristics will enable us to explore their educational implications and may guide us in defining not only new requirements for individual and social learning but also new organizational capacities that systems of learning and human and societal development must address. Informed and inspired by these understandings, we would be in a position to forge an evolutionary image of education and to set forth strategies of disciplined inquiry by which to implement that image.

In this paper and journey through the four outer circles of Figure 1 the journey will lead us to creating an example of a new image of education. A follow-up paper will explore the application of design inquiry by which to move toward the realization of the image.

The Challenge of Societal Evolution

As we approach a new millenium, we no longer see the worldwide changes brought about by unrestrained growth, technological advancements, and the knowledge explosion as a route to a better future for humanity. These changes have occurred at a much faster rate than corresponding changes in our social systems, which is a main cause of our current predicament. To understand this predicament better we look at the time scale of evolution.

* Stage One -- the evolution of human consciousness, the development of spoken languages and the emergence of tribal cultures of our hunting-gathering ancestors -- spanned hundreds of thousands of years.

* Stage Two emerged with agricultural technology some ten thousand years ago and brought the development of writing, the flourishing of city-states, and the establishment of our major religions and the logico-philosophical paradigm.

* Stage Three -- the age of enlightmenment and discovery -- brought about the Industrial Revolution, the machine age, and global telecommunication.

* Stage Four -- the current stage of evolution -- ushered in the postindustrial information age, the age of cybernetics and systems thinking and atomic and space age. It has had less than forty years of development.

A comparison of the successive stages shows rapid acceleration: a million years, ten thousand, five hundered, one hundred fifty, and forty -- what a speed! Looking at the great disproportion of the time spans of the four evolutionary stages, we can see that the combined effect of the speed and intensity of stages three and four and the fact that these two stages practially overlap have resulted in a perilous evolutionary imbalance manifested in a twofold evolutionary gap.

A Gap in Collective Consciousness

At the current stage of societal evolution, we find ourselves in a race against ourselves. Our past success in science based technology has given us the power to perpetuate ultimate destruction. At the same time, human science has led us to an understanding of our inner selves as well as to an appreciation of the oneness of humanity. This new knowledge has, in turn, created the potential to attain collective global consciousness and holds the promise of world order

Today our collective consciousness; still locked within ethnocentric, racial, and national boundaries; is lagging behind. Two questions now confront us: Will our collective global consciousness emerge enough to enable us to subordinate the interest of individuals, groups, races, and nations to the greater interest and survival of humankind as a whole? Will we continue to develop sociocultural evolution by reorganizing our experience at higher than the national level, moving to the planetary level of existence? These are not marginal questions, they bring up the issue of human survival.

Currently, we have not yet attained a new synthesis of collective consciousness. Thus, we face a crisis of consciousness, one major source of our current predicament.

The Gap Between Technological and Sociocultural Intelligence

Earlier, when societal evolution was slow and gradual, various systems of society could coevolve, adjust to each other, and keep a well-balanced pace across all evolving social systems. During the last hundred years, though, we have experienced unprecedented scientific, technological, and material advances. Early in this century, society could still acceptably manage change brought about by those advancements. During the last several decades, however, the technological revolution -- while giving us unimagined power -- has accelerated so much that we have lost control over it. We have failed to match our technological intelligence with a parallel advance in sociocultural intelligence that would render a ripening wisdom that could give direction to and guide technological evolution and harness its achievements for the benefit of all mankind.

Today, at a critical juncture of evolution, when human fulfillment as well as the annihilation of the human race are equally possible, we have the power to attain all the hopes and aspirations of humans everywhere or to race toward self-destruction as well as grave planetary injury. This misuse of power has manifested itself in multiple perils.

* The multinational arms race is gobbling up ever more of our scientific, material, technological, and human resources, producing the means for ongoing violence among nations.

* Simultaneously, we race toward destruction of our natural resources. We are fouling our air, erroding our soil, and poisoning our water. We are slow to use our scientific and technological power for turning the deterioration of our environment around, and healing the wounds of the earth.

* Most significantly, we are wasting human resources. We allow millions to die of starvation and disease. We waste our mental and spiritual potential due to lack of adequate systems of learning and human development.

The consequence of all these threats -- if unchecked -- will lead to increasing catastrophies, human suffering and despair, social and economic injustice, and violence. Eventually, they can bring about our destruction.

The dangers we now face cannot be changed just by faith in science or trust in technology. What is required is a total transformation of our thinking, beliefs, and values so that we develop and nurture a new world view. The words of Aurelio Peccei (The Human Quality, Pergamon Press, 1977), are most appropriate here:

> The real problem of human species, at this stage of evolution, is that it has not been able culturally to keep pace with, and thus fully adjust to, the changed realities which it itself has brought about in the universe. Since the problem at this crucial stage is within, not outside of, the human being, individually and collectively, the solution must also come primarily and fundamentally from within.
>
> The question is, then, one of Human Quality, and how this can be improved. It is only by developing adequately human quality and capacities all over the world that our material civilization can be transformed and its immense potential put to good use (p. X1).

Essential to all of us now is that we have a broadbased understanding of the existence of this evolutionary gap in human quality and grasp its implications for the future of us all.

The Two-Pronged Challenge

The two-pronged evolutionary gap -- in collective consciousness and sociocultural intelligence -- confronts us with a challenge of the highest order and significance. Meeting this requires understanding its individual and societal implications and learning the individual and social competencies needed to close the gap. Thus, the central nature of this challenge is first and foremost a challenge for education. The educational community -- policymakers, researchers, and professionals -- has yet to perceive and appreciate the exciting opportunities of meeting this challenge.

Meeting the Challenge of Societal Evolution

The greatest source of change in societal systems is the process of human learning (Boulding 1985) involving both new knowledge and know-how. It is this source we must tap and activate in order to close the evolutionary gap. We can acquire the competence needed to face the challenge of societal evolution, by individually and socially mastering new sets of understandings, ways of thinking, skills, and dispositions. (Collectively I call these sets "evolutionary competence".) A major barrier to developing such competence inheres in our current practice of education, which focuses on what Botkin (No Limits to Learning, Pergamon Press, 1979) calls "maintenance learning." Such learning involves acquiring fixed outlooks, methods, and rules for dealing with known events and recurring situations. It promotes already established ways of life in the context of systems that now exist. Maintenance learning is necessary for the functioning of a society, but it is not enough.

In times of turbulence, rapid change, and discontinuity, maintenance learning has to be complemented by another type of learning even more essential at the now unfolding evolutionary stage, namely, anticipatory, innovative, "evolutionary learning." Evolutionary learning empowers us to anticipate and face unexpected situations. It helps us to progress from unconscious adaptation to environmental shifts to conscious innovation and the development of the ability to manage change and coevolve with the environment.

Evolutionary learning promotes the disposition, the will, the determination to shape change rather than just react to it and often become its victims. It enables us to engage our creative consciousness and to explore and design alternative images of our systems, to evaluate those alternatives, and to select and implement our design.

A program to develop evolutionary learning will:

* Nurture evolutionary values, including cooperation, trust, benevolence, altruism, love, and the pursuit of harmony

* Fostering self-realization ethics, social ethics, and ecological ethics

* Promote cooperative group interaction skills by which we can increase our capacity for entering into ever-widening human relationships

* Learn the art of managing and resolving conflicts nonviolently

* Generate systems thinking by which to understand complexity, grasp connectedness and interdependence, and perceive embeddedness and wholeness

* Practice working with and participating in the life of the various human systems to which we belong and managing relationships and change in those systems

* Encourage anticipatory and innovative thinking, coupled with systems design.

Developing evolutionary competence through the type of learning described here is an essential condition for closing the evolutionary gap and empowering us, individually and collectively, to shape societal evolution. This condition confronts us with a major evolutionary task in education itself, namely, that of redesigning and empowering systems of learning and human development so they can engender and nurture the acquisition of evolutionary competence.

Even a glance at the competencies outlined here shows that our current systems of education do not provide for acquiring evolutionary competence. A new educational agenda as well as the creation of a new evolutionary image of education is called for to move consciously into the future. The section that follows presents an approach that will enable our society to envision and design new systems of education that have the capacity not only to coevolve with the society but even to spearhead societal evolution.

The Postindustrial Information Society and Its Implications for Educational Redesigns

This section explores the characteristics of the postindustrial information society and reveals a third evolutionary gap between societal evolution and the evolution of education. This exploration will help identify some of the pitfalls of the current educational improvement effort, as outlined below.

* Many problems stem from the orientation of focusing on the existing system and proceeding with improvements from the inside-out. This approach keeps the exploration within the boundaries of the current sytem and limits the horizon of analysis. Extrapolating from what now exists, this approach offers technical fixes and marginal improvements, accomplished in a piecemeal, add-on fashion.

* The inside-out approach not only fails to see the larger societal evolutionary picture, it also focuses on such single issues as the advancement of technological intelligence and education for economic competitiveness, failing to advance sociocultural intelligence, human quality and wisdom, and ethical and moral development with equal vigor.

* Finally, the educational community today does not yet recognize the evolutionary gap that exists between the new information age and education as one of the societal systems within it.

In sharp contrast to the inside-out approach, the outside-in inquiry described here represents a major shift in thinking and action that advances and empowers education as a societal system of the postindustrial information age. Developing an evolutionary perspective, earlier described, represented the first major stage of an outside-in inquiry (see Figure 1). This section describes the outside-in inquiry, which has two major strategies: (1) the exploration of the characteristics of the postindustrial information age, and (2) the examination of the educational implications those characteristics have in terms of individual and societal requirements.

Characteristics of the New Society

This exploration will help gain insight into the society that is now unfolding and constitutes the context of education today and for years to come. The description that follows only hints at the process of this exploration, and examples are potential indications of what knowledge and understanding might emerge if a comprehensive exploration were pursued. Such an exploration will require a significant investment of time and effort to determine the kind of questions to ask, to establish the knowledge base required to answer those questions, and to formulate the answers.

Given the above caution and disclaimer, I propose two sets of questions and offer tentative answers. The first set of questions in this section explores the characteristics of four domains of the post-industrial information age and, then, another set probes the educational implications of those characteristics.

The first set of questions asked are: What are the key markers of the postindustrial information age? What are its sociocultural characteristics? What are the characteristics of disciplined inquiry? What are the characteristics of organizations? Figure 2 presents these four domains.

Figure 2

Domains of Characterization

General Characteristics

Information/knowledge explosion, accelerating advance in intellectural technology, extension of cognitive powers, new world view

Sociocultural Character

Ethical/moral evolution, economic social justice, new world thinking, new values and dispositions, participative democracy

Organizational Character

Increasing complexities, uncertainties, accelerating rate of dynamic change and fluctuations, increased interdependencies, consensus society

Scientific Paradigm

New paradigms of disciplined inquiry: cybernetics and systems science; the sciences of complexity, synthesis, and emergence

Relationships: The general characteristics influence the other three domains. Sociocultural characteristics influence both the scientific and organizational domains. The scientific paradigm guides the technological and also influences the organizational characteristics. It is important to note that the characteristics displays here are only examples. The information is developed primarily to indicate the process one engages in to accomplish this stage of the outside-in inquiry.

1. General Characteristics. General characteristics that mark the postindustrial information age are displayed in Table 1. The categories include: mode of inquiry, the key evolutionary marker, the nature of the dominant technology, the principal commodity, and the context of social consciousness. The characteristics of the current era are juxtaposed to those of the industrial era in order to contrast and show the discontinuity between the two eras. Even a cursory comparison points out that the characteristics of the current era cannot be derived from those of the preceeding.

Table 1

General Characteristics

	Postindustrial Age	Industrial Age
Mode of Inquiry	Processes organized around intellectual technology for information knowledge development	Processes organized around energy for material production
The key Evolutionary Marker	Extension of our cognitive powers by cybernetics/systems technology (hi-tech)	Extension of our physical powers by machines
Technologies	Critical thinking; storing, gathering, organizing information, communicating, projecting, designing	Inventing, manufacturing, fabricating, heating, transporting, etc.
Principal Commodity	Knowledge/information organized to use for innovation, design, policy formulation	Material (raw/processed), machines, hard products
Context of Social Consciousness	Transnational, global in addition to ...	National and race

Even a glance at the information in the table will help us realize how much of what we teach today and how we teach it reflects the industrial model. Once we realize this, our challenge becomes to design systems of learning and human development that are grounded in the characteristics of the postindustrial information age.

2. Sociocultural Characteristics. Sociocultural characteristics shape the unfolding value system of the society and mark the emerging new image of humanity. Examples include:

* The ethical dimensions: (a) self-realization ethics that place the highest value on the development of our potential; (b) social ethics that strive to attain economic and social justice and the oneness of humanity, (c) ecological ethics that emphasize the total community of life on earth -- in humans, animals, plants, all of nature.

* The attainment of global consciousness and worldview that complements national and racial consciousness and aims at the integration of all societal systems into a planetary union while respecting and nurturing cultural diversity.

* Seeking a balanced and coordinated development of the various existential systems of the social, cultural, humanity, political, intellectual/scientific, technological, spiritual, and aesthetic in addition to the economic.

* Reconciling oppositions of the body-mind-spirit, autonomy and responsibility, cooperation and competition; expressed in a search for a holistic perspective toward life.

In the course of the outside-in inquiry, designers will consider the implications of such characteristics for the creation of the organizational culture of educational systems -- as well as -- the context, content, and mode of learning.

3. Characteristics of disciplined inquiry. The scientific orientation that has emerged during the last forty years forged a new paradigm of disciplines inquiry. Characteristics of this new orientation are:

* Complementarity of the traditional scientific paradigm and the cybernetics/systems paradigm; complementary of analysis and synthesis, reductionism and expansionism.

* Eclectic in epistomology and methodology, thus inclusive rather than exclusive; complementarity of left and right brain thinking.

* No dichotomy between the observer, the observed, and the context of observation. Complementarity of causality-acausality, free-will-determinism-mutuality.

* Participative in decision-oriented disciplined inquiry, thus involves the client, the user, the decisionmaker, and those affected by the outcome of the inquiry.

* Has ethical bases and is value focused; the orientation is evolutionary-transforming rather than technologically extrapolative.

* Seeks to attain a grand alliance of science, philosophy, and religion.

Implied in the examples is a need to be open to a whole new orientation in providing experiences for learning intellectual skills and pursuing methods of inquiry.

4. Characteristics of Organization. In describing examples of organizational characteristics, it will again be useful to show contrast with organizational characteristics of the Industrial Era.

* The amount, variety, and availability of knowledge -- as well as its absolute growth -- are significantly higher than in the previous era. Coping with this knowledge explosion requires a two-pronged, complementary increase in: (a) specialization and diversification and (b) integration and generalization.

* Complexity -- as a property of systems and systemic interaction -- is increasing. The more discrete the components in the environment, the greater the complexity of the system, requiring the organization to process more information and to consider new designs in order to enhance environmental expectations and systemic effectiveness.

* In the current era, both the level of external and internal turbulence and uncertainty and its absolute growth have become significantly greater than in the previous era. The higher this turbulence and uncertainty, the higher the premium on organizational flexibility -- the ability to learn as an organization and engage in continuous organizational design redesign.

* Increases in the rate of change -- a characteristic of the current era -- build pressure to process information rapidly, distribute it to a larger number of groups, and transform the information into organizational knowledge.

Understanding the kind of characteristics implied by the examples above will provide a knowledge base as one contemplates requisite organizational characteristics in the design of systems of learning and human development.

Educational Implications

Exploring how the above characteristics might affect education is the next strategy of the outside-in inquiry . I already hinted some of the implication while discussing the characteristics. Here, I look at further implications in two area: (a) relevance to new capabilities and new learnings that are required and (b) those related to organizational learning.

1. New Capabilities and New Learnings. The items below serve only as possible examples.

* Nurturing dispositions such as cooperation, trust, benevolence, altruism, love, and the pursuit of harmony.

* Fostering self-realization, social and ecological ethics.

* Developing competence in cooperative group-interaction skills and increasing our capacity to enter into ever-widening circles of human relationships.

* Fostering skills in managing conflicts -- of all kinds and intensities -- in a nonviolent "self-transcending" manner interpersonally and at all levels of the social system. Generating an understanding of the dynamics of conflict situations and learning to apply appropriate approaches to coping with conflict, to devising creative solutions, and to pursuing others to the point of a conflict resolution.

* Promoting a systemic/holistic perspective and competence in systems thinking and action; understanding the connectedness and interdependence of all entities.

* Developing a systems view of the world, learning to relate functionally to the ever-enlarging societal systems in which we are nested, connecting with global reality and attaining global consciousness.

* Acquiring skills and dispositions that enable us to think and act in an anticipatory fashion and to create aspirational and positive images of the future.

* Gaining the abilities of innovation and design thinking and action; learning to formulate visionary purposes, creating alternatives that realize those purposes, and evaluate and select the most promising alternative.

* Obtaining know-how in group problem-solving and consensus-building and in characterizing problem situations, formulating solutions, and managing problems.

* Learning to live creatively with change; developing high tolerance for ambiguity, diversity, and frustration; learning to welcome complex or ambiguous situations and developing appreciation (both aesthetic and technical) for creative responses, and finally maintaining a healthy concern regarding possible unintended consequences of those responses.

These new capabilities will be a set among other sets -- yet to be explored -- of the new learning agenda that will shape systems of learning and human development.

2. Organizational Learning Capacities. Understanding the characteristics of the current age leads us to suggest that educational organizations should develop new capacities to:

* Interact with constantly changing (multiple) environments and coordinate with many other systems in their environment.

* Cope with constant change, uncertainly, and ambiguity and maintain viability by coevolving with the environment by changing and transforming.

* Become evolutionary learning systems by constantly exploring or learning new ways by which to interact with their environments and move toward transforming and self-transcending into higher order structures; give direction to their ongoing evolution by means of design.

* Seek and find new purposes, carve out new niches in the environment, and develop increased capacity for: self-representation, self-organization, and self-renewal.

If pursued in a comprehensive and in-depth fashion, the strategies for an outside-in inquiry introduced here can move us toward the next phase: developing an evolutionary image of education.

Education in the Post Industrial Information Age: An Emerging Evolutionary Image

Education in any society is a reflection of the collective beliefs, aspirations, and cultural and ethical norms of its members. This reflection is articulated in terms of purposes, expectations, and policies that define and the context shape, the content and form of the educational experience. At any moment in the evolution of a society, one can extract guiding perspectives or find an explicit statement of perspectives that determine the nature and characteristics of the societal system we call schooling that provides the educational experience.

The beliefs, values, and aspirations of society's members, on the other hand, are then shaped by the educational experiences provided to them. Thus, education and society are in a coevolutionary relationship. Times of evolutionary imbalance exist between education and the society. Such is the case today when the education we offer reflects perceptions and perspectives formed about the turn of the century, and are based on the societal image of the Industrial Revolution.

As a new stage emerges in social evolution, as happened around the mid-point of this century, continuing to use old images creates more problems than it solves. But when we create a new image, it can exert a "magnetic pull" toward the future. As a societal system moves toward the realization of that image, congruence between the image and the development of the system increases.

In today's postindustrial information society, education reflects assembly-line thinking and is locked into the practices of such thinking. Sensing inadequacy, we valiantly try to improve an educational system that is outdated. Most of the recent national reports that have addressed the educational "crises" are based on the old image. We desperately need a new image of education that is compatible with the societal image of the current age. What follows is an attempt to set forth an example of certain parameters that articulate such a new image.

Current rapidly changing demographic and sociotechnical conditions as well as society's health and well-being (1) require educational experiences, resources, and arrangements that are different in nature and in quality from those we offer at present and (2) demand a much higher than the current rate of student access to and success in education.

Our society will attain and maintain vitality only if: (1) each individual is provided opportunities and arrangements to fully realize his/her human potential, and (2) each societal system -- from the family to the global -- is set up as a learning system for the full development of its organizational capacity and the collective capability of its members. This capacity and capability then enables members to give direction to their evolution by design.

What follows is an attempt to project one possible image of education developed in view of the characteristics of the current age. The first stage in generating a vision at a compatible educational system is to organize perspectives that will then guide the second stage, developing the image itself.

Organizing Perspectives

Articulating sets of organizing perspectives can guide thinking and inspire and inform the creation of the image. Reflection that comes from contemplating societal evolution and understanding the characteristics of the current evolutionary stage (and its implications for education) is both the source and the grounding of creating new images. The set of organizing perspectives introduced next are possible examples for what might emerge at this stage of an outside-in inquiry.

Value perspectives:

* Two absolute values exist: the individual and the global system of humanity. Arrangements of activity systems between these two are sociocultural inventions that serve both. Systems of learning and human development are such arrangements.*

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* Systems of learning and human development are agencies and institutions of the society that assist in the physical, social, cultural, intellectual, emotional, spiritual, aesthetic, ethical, and moral development of individuals and groups.

* Of all the resources on earth, the resource of the highest value is the uniqueness and the unique potential of the individual.

* Among the highest order values of human rights is the freedom and right to learn.

* At the current stage of evolution, the most valued contribution that advances societal evolution is the advancement of human quality and wisdom and the development of sociocultural intelligence.

Perspectives on learning:

* Learning and human development are intrinsically intermeshed and should not be institutionally separated.

* No limits to learning exist: learning and uman development never end.

* The individual learner assumes the central position in systems of learning and human development.

* Systems of learning and human development are to provide arrangements, opportunities, and resources to nurture the uniqueness and develop the singular potential of the individual.

Perspectives on the content of learning:

* The content of learning and human development should include knowledge, understanding, ways of thinking, skills, dispositions, and values.

* Societal evolution and characteristics of its current stage are primary sources in determining the content of learning and human development.

* The system should provide for learning competences that enable the learner and societal groups to develop. evolutionary competence and so become empowered to give direction to their evolution by design.

Societal and organizational perspectives:

* Systems of learning and human development are evolutionary and should coevolve with the larger society as well as spearhead societal evolution.

* Systems that attend to learning and human development are to be integrated with the community and the society.

* Systems of education should be coordinated with other societal systems that attend to the sociocultural, ethical/moral, spiritual, economic, scientific/technoligical, and aesthetic dimensions of the human experience.

* Educational systems should develop the organizational capacity and human capability to engage in continuous organizational learning and design.

The value perspectives influence the other perspective sets. All perspective sets and as well as components of a particular set should be internally consistent. Furthermore, organizing perspectives should represent the consensus of all stakeholders.

An Evolutionary Image

What follows is an attempt to formulate one possible image of education, based on the organizing perspectives described above, that is compatible with the societal image and characteristics of the postindustrial information age. This is formulated as an evolutionary image that has the power to guide the purposeful development of systems of learning and human development. The image is "put out there" and can exert a magnetic pull in the design and development of educational systems. In designing those systems, we shall "work back" from the image. In that sense, we carry on the inquiry from the outside. (It is shown again that the outside-in inquiry is in contrast to the inside-out approach, where we extrapolate from the existing system.)

Table 2 juxtaposes two sets of parameters: the left column represents an evolutionary image. The right column reflects the charactertistics of existing systems of education that, in fact, constitute barriers to attaining the evolutionary image.

Conclusion

At this juncture two questions arise: Do we have the will to engage in the major task of transformation and redesign of education? And do we have available to us appropriate and adequate models and methods to carry out the design and development of new systems of learning and human development?

While an answer to the first question must come collectively from the society and the educational community, we can answer the second question in the affirmative. From organizational and systems inquiry, we now have available to us models, approaches, and methods that we can learn to use and apply in the redesign of systems of learning and human development. Thus, the next task is to familiarize ourselves with those models and approaches and to explore their use in redesigning systems of learning and human development.

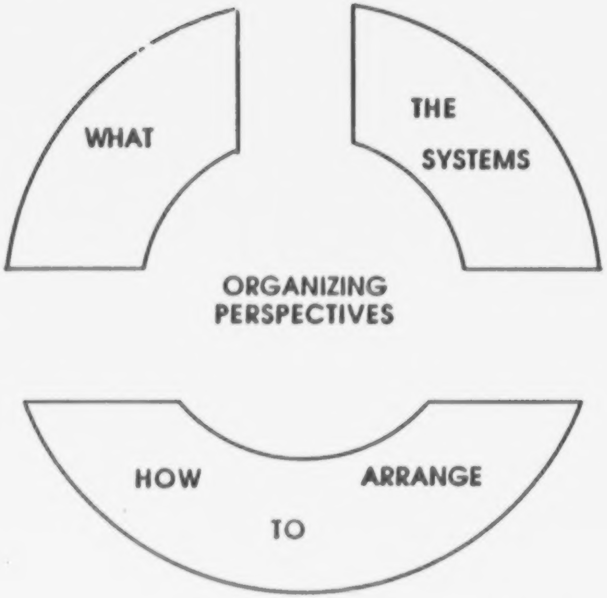
Table 2

Comparison of the Evolutionary Image with the Existing System

The Evolutionary Image A desired future state	The Existing State The barriers
• Become a societal system integrated with all other societal systems in a cooperative-coordinated relationship.	• Set up as an autonomous social agency, separated from other' societal systems.
• Reflect and interpret the society as well as shape the society through coevolutionary interactions, as a future-creating, innovative, and open societal system.	• Is an instrument of cultural and knowledge transmission, focusing on maintaining the existing state and operating in a closed-system mode.
• Provide resources, arrangements, and lifelong experiences for the full development of all individuals.	• Provides for instruction to the individual during her/his school-age years.
• Embrace all domains of human and social existence including the sociocultural, ethical, moral, spiritual, economic-occupational, physical-mental, political, scientific-technological, and aesthetic.	• Focuses on the basics and preparation for citizenship and employment.
• Be organized around the learning experience level; arrangements should be made in the environment of the learner by which to attain competence.	• Is now organized around the instructional level: arrangements are made that enable the teacher to present subject matters to students.
• Use a variety of learning types: self-directed, other-directed, individually supported group learning, cooperative learning, social and organizational learning -- all useful to enhance individual and societal learning.	• Teacher-class or teacher-student interactions are the means to provide instruction.
Use the large reservoir of learning resources and arrangements available in the society in order to support learning.	• The use of educational resources and arrangements is confined within the territory of the school.

Figure 3

Evolutionary Image



Embrace all domains: the socio-cultural, ethical, moral, spiritual, economic, physical, mental, scientific, technological, and aesthetic

Provide resources, arrangements, and lifelong experiences for the full development of all individuals.

Use a variety of learning types: self-directed, other directed, co-operative, social, and organizational learning.

Reflect and interpret the society as well as shape the society through coevolutionary interactions as an open societal system.

Societal systems integrated with all other societal systems in a coordinated or integrated relationship

Use the large reservoir of learning resources and arrangements available in the society

The prime imperative is that educators should be organized around the learning experience level; arrange for learning and human development.

REDESIGNING EDUCATION

A REPORT OF A TASK FORCE ON NEW DIRECTIONS FOR REGIONAL EDUCATIONAL LABORATORIES

TASK FORCE INSTITUTIONS:

APPALACHIA EDUCATIONAL LABORATORY
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REDESIGNING EDUCATION

The New Context of Education

Schools serve society. For 35 years American society has changed dramatically, altering the requirements for education. Here are examples of the changing context:

- Fewer than one-fourth of the nation's households have children.
- Households with children no longer resemble the families of the past; the majority have two breadwinners and an almost equal number are headed by single parents.
- More than one-fourth of school-aged children live in poverty.
- The largest category of workers are those employed in low-paying service jobs; production jobs have been cut in half.
- Advanced technical skills and the capacity to use sophisticated information systems are essential to advance in society.
- There is a significant mismatch between the technical requirements for jobs and the skills available in the labor pool.
- Women constitute a majority of the professional work force and approximately half of the total work force.
- A large number of American jobs depend on international trade or are directly competitive with foreign producers.
- The paradigm for representing reality is changing: the world is complex, not simple; events are the product of multiple, not single causes; objectivity depends on perspective.

Startling? Remember, these are characteristics of the existing society. Future changes will be even greater, reflecting a society as fundamentally different from the Industrial Society as the Middle Ages were from the Renaissance or the Agriculture Society was from the Industrial Society.

New Schools Are needed to Meet the Challenge

Today's schools aren't designed for an information-technological society. They have undergone many changes, but the pressure for change has resulted in increased bureaucracy and legal red tape that has made it too easy to lose sight of the mission: all children learning. The problem is compounded by a school design inherited from the industrial society, a design which uses one-way lectures, repetitive seatwork, rote memorization and a top-down, non-participative management style.

Today's schools don't serve the majority of learners. The result of the old design has been devastating at a personal level; illustrations include:

- At a time when achievement should be rising and all children completing school, 25% don't graduate from high school; a disproportionate number of these children are minority and poor.
- Many others just "get by," graduating without the skills and knowledge needed for their own development and needed by the nation's employers.

The effect on the economy has been equally disastrous as illustrated by these examples:

- Students who dropout would have generated wages of $220 billion dollars which would have contributed $65 billion to tax revenues and reduced the nation's deficit.
- The nation spends $20 billion annually on prisons: 60% of prison inmates are dropouts. 58% of all dropouts are unemployed or receiving welfare.
- A one percent decline in unemployment could reduce the federal deficit by $30 billion.

One prominent educator has concluded that schools serve one-fourth of the society's students.

The problem is one of design. It isn't the failure of the professionals responsible for American schools. By and large they are doing a better job under more difficult conditions than their predecessors. What's wrong is the design or structure of a system that cannot overcome differences in language skills caused by family and socioeconomic conditions, a system that can't keep pace with changing technologies and knowledge, a system whose bureaucratic structure inhibits the motivation and creativity of teachers and administrators.

All aspects of the old system must be reconceptualized. The responsibility of education is to design and implement learning systems that empower people to shape their own futures. These systems must match advances in technology with advances in human wisdom to improve the quality of life for all. More specifically, education must:

1. Increase learners' performance at gathering and interpreting information from an increasingly complex environment.
2. Improve reasoning and decisionmaking skills.
3. Expand capacity to produce knowledge and products--not only in the basic areas of written and oral communications but other outcomes such as the production of knowledge and creative solutions to problems.
4. Develop "executive capacity," i.e., a positive disposition toward self and learning, a willingness to commit and take risk, a personal vision that pulls learners to the future, and monitor behavior.

5. Help people learn how to work together productively and use the variety of tools and technologies that support human intelligence and productivity.

6. Learn how to learn so that they can keep pace with the geometrically expanding knowledge--especially interdisciplinary knowledge imbedded in the complex problems facing the 21st century.

Accomplishing these goals means reconceptualizing curriculum, developing new teaching methods, restructuring management and opening governance up to the full community of stakeholders in education: parents, community groups, businesses and the myriad of governmental agencies concerned with education--social service agencies, the criminal justice system, job training centers, childcare systems, etc. Schools must create new alliances with these groups and individuals, moving from cooperation to collaboration and the integration of efforts.

Educational Support Systems Must Also Change

Existing efforts to improve education operate on a paradigm that focuses on fixing the old system rather than redesigning it. That is, state reform movements, federal interventions, and research and development efforts try to make the old system more efficient and effective rather than transforming it to meet new context for education. The situation is analogous to trying to increase the efficiency of the internal combustion engine: large investments are needed to get relatively small improvements. In education, massive investments in programs such as those for the educational disadvantage have not produced improvements proportionate to the size of the investment. The focus needs to shift to new designs, ones that are as different from the current notion of "keeping school" as an nuclear engine is from the internal combustion engine.

We need transformed support systems that will use all available knowledge, including that which emerges from educators and parents, to help build new designs, learning in operational settings. These systems must:

1. Shape the public's understanding of the need to transform education as the critical element in the nation's future (for example, 85% of economic growth is attributable to people; only 15% is the result of new capital equipment).

2. Build systems that support strategic decisionmaking by the people taking the risks involved in significantly changing education.

3. Produce models, technologies and other instrumentalities that have demonstrable impact on the most urgent problems education faces: reducing school dropouts and the increasing achievement of the socially and economically disadvantaged.

4. Catalyze all of the stakeholders concerned with education to act collaboratively to redesign education; this can only be done if the catalysts remaining politically neutral, cooperating rather than competing with the stakeholders.

There are only two ways such an undertaking can be mounted: (1) creating new organizations or consortia or (2) transforming the existing R&D infrastructure. Option one could be far more exciting but the past twenty five years demonstrates how difficult and costly it is to build new institutions. Consortia can quickly be assembled when federal dollars beckon, but the institutional capacity for change seldom accompanies opportunistic lashups. Most important, building constituencies of users and clients for these temporary arrangements is very difficult. The educational establishment is very skeptical of organizations in which they have no ownership or voice. Transforming the existing establishment will not be easy, but the organizational development issues involved are minimized.

Regional Educational Laboratories constitute a core element of the R&D infrastructure on which a new, transformed support system for redesigning education can be built:

- They have the advantage of being established "self regulating organizations."
- They are capable of delivering services evenly across the country.
- They represent the broad establishment of education in their governance structure; in effect, they are governed by the community that must be changed.
- They are flexible and can undergo a mission transformation much more easily than other organizations because, while they are part of the establishment, they remain on the political margins of that system and do not have a vested interest in any of the many political perspectives that sometimes divide teachers from administrators, elected policy makers from state education bureaucracies, universities from K-12 practitioners, or parents from the jargon and bureaucracies of schools.

Transforming Regional Educational Laboratories will require a deliberate change in their current standard operating procedures, however. They must:

- Re-examine the composition of their boards to be sure they are representative of all the stakeholders in the public policy arena as well as business and the community.
- Re-examine their missions to reflect their commitment to redesign and human capital formation.
- Re-examine the competencies of staff who are more accustomed to strategies designed to improve the old system rather than transform it.
- Develop new strategies (e.g., design strategies) that are more powerful than those reflected in traditional R&D paradigms.

A Generic Model of Organizational Inquiry for Educational Design

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Introduction

Despite various reform movements in education over the past two decades, many major problems in American schools persist or have grown worse. Schools continue to be criticized by a variety of groups for lack of efficiency and effectiveness or for being out of step with the needs of learners and the current requirements of the society. Unfortunately, no set of recommendations for reform, no matter how comprehensive, will fit conditions in all schools.

Paralleling diverse conditions in schools are equally diverse ideas about the types and extent of changes needed in education. Views range from selective realignment to redesign. Advocates of realignment see the various reforms of the past decade -- professional development, increased goal clarity, improving school climate, upgrading discipline, lengthening the school day -- as indicating progress toward the kind of schools we need.

Realignment educators focus on improving the overall school performance within the framework of existing goals and priorities. Given certain basic assumptions about what a school is and how it operates, they implement new or modified practices to increase efficiency or effectiveness. Questions guiding this perspective are: How can we rework current school programs and practices to do a better job of meeting our goals and standards? Are we doing things right?

Advocates of redesign, on the other hand, see American schools in deep trouble and unable to do much about it. They point to the growing rift between the needs of learners who must navigate in a postindustrial society and schools that follow practices and requirements patterned on an outdated industrial model. They highlight striking demographics in urban areas where schools seem unable to cope with diverse student populations. They cite discouraging statistics about teenage dropouts, substance abuse, and pregnancy as indicating more social deviancy than the schools are designed or prepared to handle. As a result, they rate current efforts to improve schools as piecemeal, fragmented, and inadequate. In effect, nothing less than overall educational redesign will work to meet the present and projected needs for learning and human development.

Redesign educators are willing to consider new, unique, and unfamiliar ways of organizing and delivering education services without any basic assumptions about what a school looks like or has to be. Rather than being reactive, either mirroring social problems or meeting them as they arise, redesign advocates believe education should anticipate changes and prepare to meet the needs of learners, the community, and society as they unfold. Social changes surfacing with unprecedented speed call for education systems that are flexible and self-correcting. For this, the entire educational system and its goals, functions, programs, and practices has to be open to question. Inquiries that guide this perspective are: What should our educational system be doing? What functions should education perform? Who needs to be educated and how? How should education be organized? What are the right things to do?

The bottom line is that schools and their communities must continually examine their programs for both effectiveness and appropriateness. Then they must act to do what is necessary. Most educators know the problems well, having experienced them firsthand. Their responses will probably range from improving the existing system to major redesigns. For effective response, we believe schools need new models and methods that will enable them to engage in both improvement and redesign efforts concurrently. This paper describes a model we are developing and using to guide our work at Far West Laboratory in the arena of educational redesign.

The Model

Our approach to improving education reflects several basic premises that developing models and resources. These essential premises are:

- School districts need to generate their own capacity for conducting ongoing inquiry into how to improve their programs, processes, and structures. This means becoming an organization that learns about itself and improves itself using broadly-based sources of information.
- Educational systems should take an evolutionary view of themselves. Thus, educators must not only work to correct more glaring problems but also rethink and design many existing policies, programs, and practices so they meet present and future needs.
- The appropriate focus for analysis and design is at the level of the learner and the learning experience. All other aspects or levels of schooling stem from this as a first consideration.
- Changes, whether minor or major, ideally result from efforts at careful analysis and design. The goal is to create an educational system that closely aligns itself with important forces -- values, priorities, needs -- of the environment it serves.

- Efforts at inquiry should address the entire range of educational system issues.

- The success of efforts to improve or restructure balances on the good will and commitment of all participants and especially those ultimately affected by any changes.

In order for schools, or any organization, to initiate and sustain effective ongoing self-scrutiny, four basic and interactive capabilities must exist. The model in Figure 1 reflects the following capabilities:

- The system needs various mechanisms and structures to manage inquiry and renewal processes.

- The system must be able to analyze its own operations as well as its environment to evaluate how appropriate the system's functions and operations actually are.

- The system needs to generate images of how the educational enterprise should be conducted and then design both idealistic and realistic specific representations of those images.

- The system must be capable of change, so it can implement selected designs.

Based on these functional capacities, it is essentially a choice model: targets for analysis, design, and implementation as well as the outcomes are influenced by the context of the inquiry. Specifically, the context includes the values, priorities, requirements, and perspectives of those making the inquiry. Thus, their perspective will determine the inquiry's nature as well as its sequence.

Investigation toward change usually, though not necessarily, starts with some form of analysis, then moves on to issues of design and implementation. Viewpoints on the need for change within the organization direct the scope and focus of the inquiry. For example, each of the following perspectives is possible:* (See Figure 2).

Maintenance

The dominant orientation here is toward preserving the status quo, maintaining the organization as it is. A general belief that the organization is performing well characterizes this view. Fine-tuning for more efficiency and effectiveness comprise most efforts at reform, for example, curriculum alignment, identifying, analyzing, and solving isolated problems.

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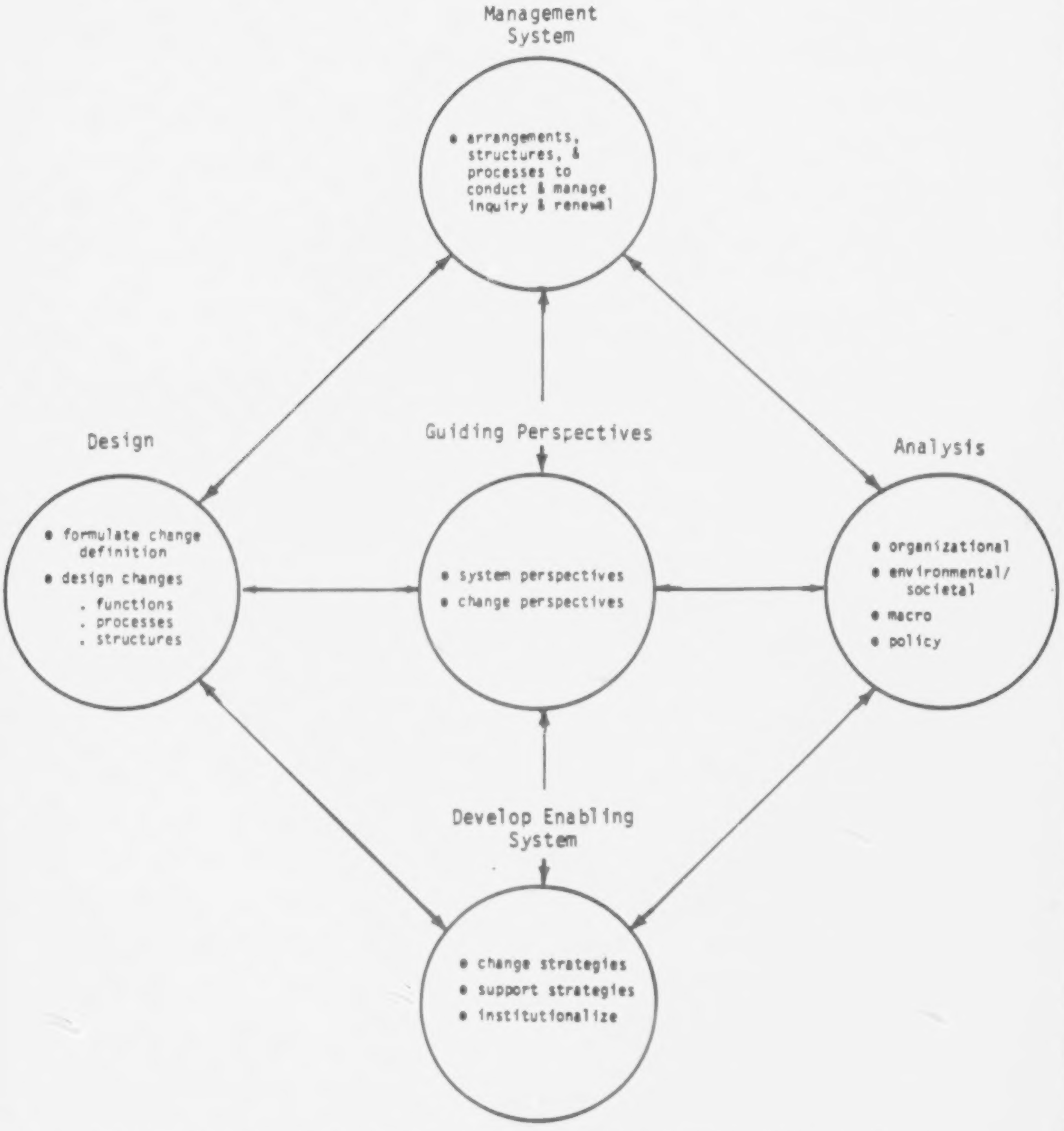
* These perspectives seldom exist in a pure form -- a mix is more likely. Also orientation to a particular style will often shift, depending on the situation.

Figure 1

Organizational Inquiry in Education



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2 Banathy, Bela H., "Systems Inquiry in Education," Systems Practice, Vol. 1, No. 2, 1988. Far West Laboratory, San Francisco, CA.

Figure 2.

SOME PERSPECTIVES ABOUT CHANGE

PERSPECTIVE	TYPICAL INQUIRY QUESTIONS
1. MAINTENANCE	● WHAT HAS ORGANIZATION LOST IN EFFECTIVENESS OR EFFICIENCY?
2. ADAPTATION	● ARE WE DOING THINGS RIGHT?
3. DESIGN	● ARE WE DOING THE RIGHT THINGS? ● WHAT SHOULD WE BE LIKE?

Adaptation

The dominant orientation in this case is toward improving the organization's performance so that results will line up with objectives and expectations. Adoption/adaptation of new programs or practices to keep abreast of change is common. Wanting to stay on "the cutting edge" may be part of this orientation (including, for example, computerized instruction, new textbooks, team teaching, alternative instructional programs). This is the most common perspective.

Design

Here the dominant orientation is toward "shaping the future" to give direction to change rather than simply reacting to it. There is a willingness to consider a substantially different system of schooling that is more consistent with the emerging long-term needs of clients and other aspects of the environment that education serves.

These three perspectives on change naturally shape the nature and direction of any inquiry the organization initiates. The specific choice of mode depend partly on the organization's predispositions about change (past experiences, the status of people involved in the inquiry effort, personal beliefs and values), on the size of any perceived discrepancy between actual and ideal states in the organization (e.g., the appropriateness of existing design characteristics), and partly on the organization's capacity to engage in systemic inquiry.

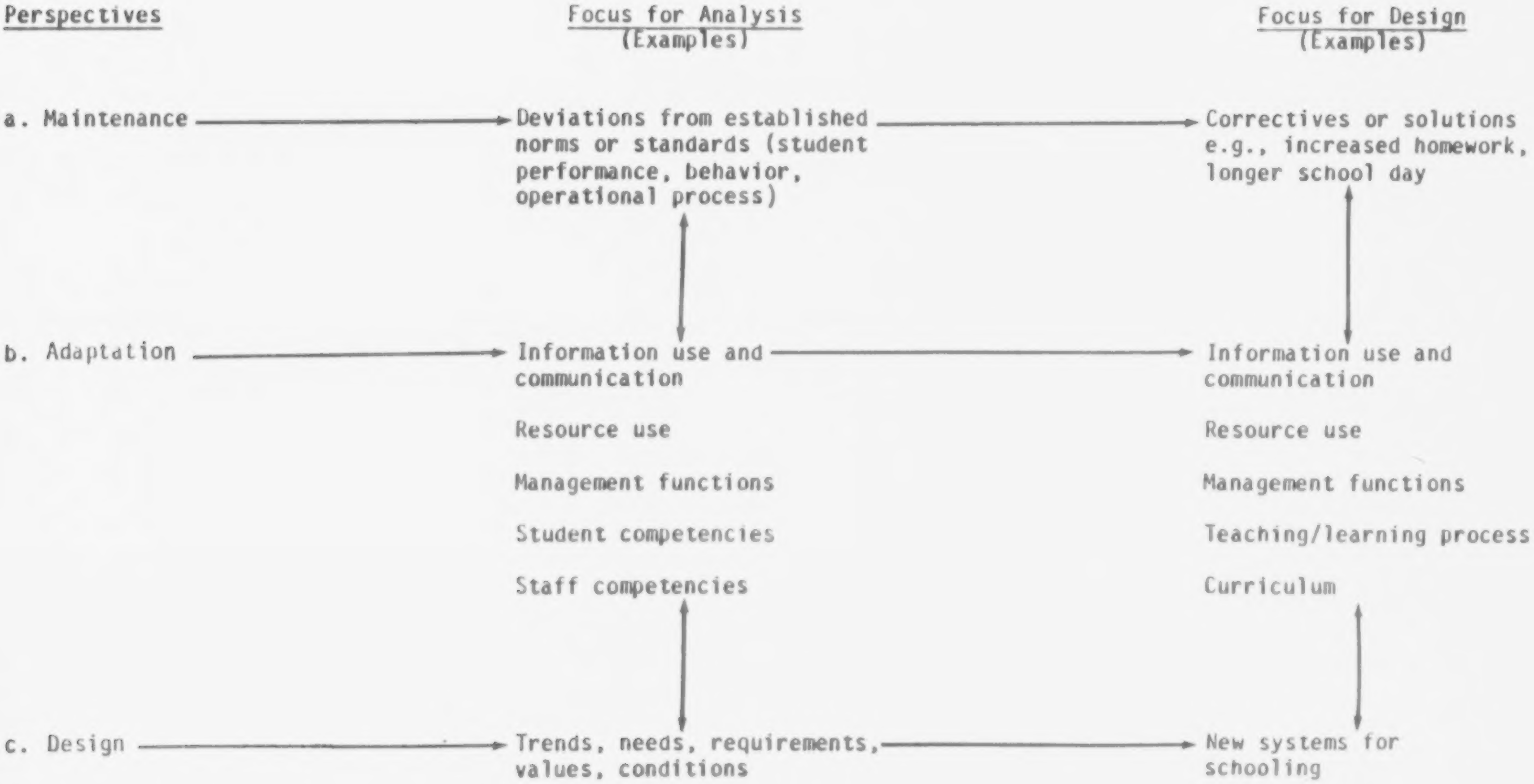
The first two perspectives of maintenance and adaptation assume that the goals, structures, process, and so on of the organization are basically sound but may need improving. To manifest this perspective, the process of fine tuning might begin with a school-effectiveness-analysis instrument that asks faculty to rate themselves on a wide range of organizational effectiveness variables. Using the resulting data, a leadership team or task force begins a process of interpretation, communicating with other staff, developing improvement goals, designing changes, implementing reforms, and monitoring progress.

Each perspective tends to focus attention on different issues for analysis and, so, design. Figure 3 shows some of the possible differences. The variations among inquiry modes reflect different frames of reference, yet even with these mind sets, the perspectives will overlap and are context dependent; that is, as situations change within an organization, the perspectives will also change. Thus, as the perspective moves from maintenance through adaptation to design, the process tends to become more complex and more systemic.

The third perspective, design, assumes that existing goals, structures, processes, procedures, and so forth may not be appropriate for providing an education (either now or in the future). Given this as a baseline, a series of inquiry activities would lead to an "ideal design" for schooling. Though implementation planning is, of course,

Figure 3.

INQUIRY MODES


Perspectives
Focus for Analysis (Examples)
Focus for Design (Examples)
a. Maintenance
Deviations from established norms or standards (student performance, behavior, operational process)
Correctives or solutions e.g., increased homework, longer school day
b. Adaptation
Information use and communication
Resource use
Management functions
Student competencies
Staff competencies
Information use and communication
Resource use
Management functions
Teaching/learning process
Curriculum
c. Design
Trends, needs, requirements, values, conditions
New systems for schooling

affected by what is feasible, this approach has the district reworking the overall design of schooling rather than just retuning the existing system. We recommend that schools engage in both adaptation/improvement and redesign efforts concurrently. By combining both perspectives, a school can focus on improving the present while designing for the future.

Targets for Inquiry

The primary purpose of inquiry is to determine which existing organizational design elements are appropriate and then to introduce needed changes. For an educational organization, the design elements (see Figure 4), and thus the potential targets for redesign, include:

- The vision the organization holds about its reasons for existence. The school mission statement, its goals, and the desired outcomes are parts of this vision.
- The kinds of clients the system serves. Preschool, primary, elementary, middle, secondary, higher education are terms that both describe and limit the focus of attention for specific educational organizations. Do these implied limits of responsibility unreasonably restrict how effective educational organizations are in serving their communities?
- The services the organization provides and the products it produces. Instruction, counseling, advising, child care, parent education, adult education, community services, physical fitness are a few of the possible services a school district might offer.
- The structures, processes, and arrangements the system uses to manage and/or improve its operation. What is the organizational structure? Where is decisionmaking lodged? How are oversights and advisory functions established? How adequate are the information and resource use processes?
- The means for accomplishing its mission. What are the primary teaching-learning methods? How are learners organized or grouped for learning? What learning resources are in use? How is the curriculum organized? What role does technology play? Is the curriculum appropriate and aligned with assessment?
- The personnel involved in its operations. Does the system have the right mix of personnel? Are they sufficiently competent in terms of knowledge and skills?

Figure 4.

DESIGN ELEMENTS

- Organizational Vision
- Clients Served
- Services Provided
- Structures, Processes, Arrangements
- Means for Accomplishing Purpose
- Personnel
- External Relations
- Resource Base

- o Relations with the external environment. Is there support from the environment, two-way communication, appropriate involvement, cooperation, close collaboration?

- o The resource base. How well is it used? In what other ways could resources be used more effectively and efficiently? Where might the system obtain more or different resources?

When staff within the organization see the design elements as appropriate or on target, little change occurs. In such a case, any concern about improvement would be directed toward maintenance, improving efficiency, or correcting minor deviations that arise. On the other hand, if staff judge one or more of the design elements to be inappropriate, major changes may be in order. When this happens, the effects tend to reverberate throughout the system, which makes efforts to redesign more systemic in nature.

The Outcomes of Inquiry

A school or school district that has the capacity to carry out inquiry functions and that does so periodically, achieves certain results. First of all, staff has examined the design elements and characteristics that could be used to describe the system and has tested these against the best information available to help determine their appropriateness (e.g., research, exemplary practice, social trends, requirements, staff, student and community values, and perceptions of needs). Second, the organization itself has developed its capacity to process both information and resources in pursuit of its purposes both efficiently and effectively. For example, educators gather appropriate information from a variety of sources, interpret that, and then use it for decisionmaking. They routinely pass essential information along to those who need or want it. Staff members participate in and are well informed about policy and goal development. A high degree of interaction and communication takes place among staff related to organizational improvement. Staff also anticipate changing community, school, and learner conditions and needs and restructure priorities and resources to address them.

These are two very important primary accomplishments for organizations. The first means that the system is carrying out its intended purposes and performing its functions as well as possible. The second helps ensure that the system continues the inquiry process and remains aligned with its environment.

In addition to an improved educational system, there are other specific benefits to sustained use of the model. Each of these represents an aspect of organizational health.

- The organization learns about itself. Organized information representing staff members' perceptions about various aspects of their school is made available for the entire staff.

- The organization learns about the environment in which it operates. A specific issue to consider -- that often uncovers some surprises is how well programs are aligned with the interest and needs of the larger community.

- Having the opportunity to think about and create changes in how work is accomplished can lead to new, more effective ways of conducting schooling.

- The organization and individuals within it develop new and sophisticated knowledge and skills to continue the inquiry process. This is consistent with our first premise -- all organizations, need to develop their own capacity to engage in disciplined inquiry.

- Empowerment grows in the sense that educators who have the capabilities to perform analysis, design, and implementation will become better at bringing about and sustaining renewal and change.

In summary, we have presented a generic model for organizational analysis and design that presents a number of system perspectives. For example, it reflects concerns for:

1. Organizational capacity-building.

2. Organizational learning.

3. The concept of embeddedness, seeing education as nested in the community and in larger societal systems.

4. The dynamics of interdependence among functions and components within school systems.

5. Complexity of education in terms of expectations, requirements, operations, and relationships with other systems.

6. The complexities of bringing about designed change in social systems that are both vulnerable and necessarily responsive to a wide range of values, beliefs, requirements, and political forces.

Configuring the Education System for a Shared Future:
Collaborative Vision, Action, Reflection

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TABLE OF CONTENTS

Page

I. A New View of the Problems in Education 1

A. Seeds of a Strategy 1

B. Building a Shared Vision 3

C. Stimulating Productive and Meaningful Action 5

D. Reflecting for Sensemaking 9

II. Using the Strategy 10

A. Moderating and Centering Groups 10

B. System-linked Pilot Efforts. 11

C. Modifying System Characteristics 11

D. Here We Go 13

Footnotes 15

94

A New View of the Problems in Education

The conditions of today's world demand that fundamental changes are essential not only in the ways we educate our young but also in the entire education system that supports the schools in their work. Students today who simply memorize a body of facts will soon find themselves ill equipped to apply those facts. Not only will the facts be out of date, but the student may not have acquired the ability to process new information and apply new learnings. Until recently, most of the reform activities concentrated on things that students, teachers, principals, and others could do to perform their work better; now educators are beginning to realize that repairing the current system is not enough. We must change fundamentally the way we think about and provide schooling to the nation's young people.

Given their complexity and scope, the challenges we face in education constitute a metaproblem, *problemanque*, or, to put it bluntly, a "mess."[1] As such, they are too extensive and multi-faceted to be handled by any single organization, no matter how large or skilled. Moreover, in every state the number of actors has increased geometrically and now includes governors, legislators, state boards, associations and community groups, social service agencies and businesses, as well as educators at several levels. Because the mechanisms for overall coordination are not well developed, solutions are pursued in isolation from one another and may be based on conflicting values. Actions and reactions add to the turbulence, compounding the already complex problems.

In order to keep moving forward despite the turbulence, many people ignore the larger reality, devising solutions to fragments of the metaproblem. The result is piecemeal action that drains energy and results in loss of meaning.

It is possible, however, to create and sustain the large-scale, complex educational improvement that system rebuilding requires by identifying and using as tools elements inherent in a given situation and by embracing the messiness of reality rather than ignoring it.

Seeds of a Strategy

To do this, the current repertoire of change strategies must be expanded to include approaches that are designed to work in large-scale, highly complex, and rapidly changing situations characterized by potential high conflict among concerned parties.

If indeed we are in the midst of rapid social change and need to transform the education system, we need seriously to consider what our overall strategy of change should be. We cannot expect a successful major transformation with a shotgun approach or one that does not recognize the amount of complexity, conflict, diversity, and interdependence involved in the education enterprise.

First of all, the strategy must be founded on collaboration and inclusion, for very practical reasons. The turbulence caused by multiple actors acting in multiple, unconnected ways; the bad policies that result from successive, disjointed compromises; the "you may win this one, but I'll get you next time" orientation that one state-level actor called "cowboys and Indians" – those are all too costly to allow to persist.

In facing complex problems, it is critical to have diverse perspectives in order to frame problems and craft workable solutions. We can no longer afford to leave anybody out; our fates are inevitably and inextricably linked. We must move, then, beyond maximizing the self-interest of a few to maximizing the self-interests of all. Collaboration and inclusion must be the very essence of the strategy, not just something done at the beginning of some sequence of action as a step called "building ownership" or under the heading of "overcoming resistance." The inclusion must be based on the use of cooperative rather than controlling power. Vision building and action among and between organizations must use enabling power to motivate and energize others, because traditional hierarchical power loses potency the farther it travels beyond the boundaries of individual organizations.

Mobilizing and sustaining individual motivation and energy are the critical objectives here. As Harlan Cleveland notes:

> In an information-rich polity, the very definition of control changes. . . . Decision making proceeds not by "recommendations up, orders down," but by development of a shared sense of direction among those who must form the parade if there is going to be a parade. . . . Not "command and control" but "conferring and networking" become the mandatory modes for getting things done.[2]

Second, the strategy must be based on a new vision of what education is all about. As has been so well argued in the Carnegie and other reports,[3] our economic future requires people not only with basic skills but also well-developed capacities for creativity, problem solving, and high level integration and analytic thinking. Additionally, we must actively support the diversity that characterizes our nation by developing much more flexibility and creativity in instructional and organizational approaches. This vision must be a vision of the whole: it must include not only what we want for the whole child, but for the entire education system. Adults must model the same behaviors we expect the young to develop. We must finally begin to "walk our talk."

Third, the strategy must allow us to build a new infrastructure that will support and sustain the rebuilding effort -- one that connects intra-organizational and multi-organizational frameworks. Such an infrastructure would occupy the space between organizations and the society as a whole. It would include what Trist has called "referent" organization activity, which acknowledges and works from the interdependence of organizations in a problem domain. According to Trist, "So far as this process gains ground, a mode of macroregulation [in the biological sense] may be brought into existence which is turbulence-reducing without being repressive or fragmenting. Its virtue will be that it will have been built by the stakeholders themselves." Such referent organization activities would bring together multiple perspectives, without which metaproblems cannot be addressed.[4]

Finally, the approach has to be quite different from the linear and fairly top-down and impersonal planning/change strategies that are so familiar to us all: establish the goal, implement the plan, and evaluate the results against the goals. Because the type of change we are projecting is vision-based, strategies beyond mandates must be used: one can require minimums, but not maximums.

The master planning or formal analytic strategies were developed in times and for conditions where the target of change was fairly clear and stable, making it possible to analyze the situation rigorously and develop a detailed implementation plan. Over the years of the industrial society, highly refined methods of formal analysis, goal setting, and implementation strategies have been produced and have been very effective. In situations of low conflict and low complexity, it is entirely appropriate to continue to use these strategies.[5] However, for complex and often conflictful situations, a different approach is needed.

Based on an extensive review of ideas about change strategies for complex situations, we suggest that states consider an approach for moving forward on reshaping their education system that consists of three components, all premised on collaboration and inclusion. First we must move toward a shared vision of what the education system should look like and why that vision makes sense. We need to understand when to embrace diversity and interdependence and when to try to eliminate it. Second, we must stimulate productive and meaningful action that starts to make that vision a reality throughout the system. Third, we must have reflection for sensemaking -- i.e., ways to reflect on our progress and make sense out of what happens as people begin to act to implement the vision.

These are not linear steps, however. This approach is more like managing a three-ring circus where the emphasis on each ring shifts based on complex orchestration, where the rings sometimes overlap and blend together, and, above all, where actions of those involved, though guided by a common sense of theme, are not fully predicted or controlled. Simply put, its management requires creative thinking.

In these situations, no grand redesign can be articulated at the start; to the uninitiated, the methods appear fragmented, contradictory, and nonlinear. Yet upon closer examination, the underlying components of collaborative vision, action, and reflection are present, and progress is made.

However, such strategies of change require committed orchestration, strategic involvement, clever communication approaches, and a long-term commitment to achieve the desired consequences. It is not muddling through. It is purposeful, proactive, conscious, skilled management that binds together the contributions of formal analyses, political and power theories, and psychological and organizational behavior concepts. It requires full immersion in the "mess" in order to gain understanding, listen to multiple points of view, embrace the diversity and complexity, and deal with strategic parts of the system. Despite its difficulty, it seems our best hope.

Building a Shared Vision

A shared vision of an equitable and effective education system in which all students are learning more, thinking better, and are more actively engaged needs to be built among many people. Because the existing industrial model of schooling is so familiar to so many people, it is extremely difficult to build new images in people's minds of what the schools and supporting structures should look like. It is analogous to trying to have people understand what an automobile is when they are only familiar with horse-drawn buggies. The vision needs to be widely shared because so many types of people have impact on the system -- the public, business leaders, educators, state leaders, and so on.

Nearly all of us deeply involved in the education reform movement are tempted to give our answer of what the schools should look like. We contend, however, that there is no one right answer in this quest. Rather, we need to provide people with the best ideas available to stimulate their thinking, gain multiple perspectives of people involved or affected in different ways by education, and help people recognize that fundamental notions about education have to change.

As we proceed in this direction, we expect that the structure of the education system will end up looking fundamentally different. Although we cannot fully predict what the structure and character of the education system needs to be like, we can make some educated guesses based on what is known about the structures of organizations and the pressures for changes in the nature of education. Our guesses are of three types: ones related to organizational structure and processes, ones related to what is taught, and, finally, ones related to how teaching and learning are conducted.

In terms of structure, we expect an infrastructure that attends to the gaps between organizations and units and rethinks organizational boundaries. Today's problems and challenges do not respect organizational or even national boundaries. In the United States, for example, we are becoming more and more skilled in the art of management within organizations and hierarchies, moving toward a fine blend of authority and shared decisionmaking. The infrastructure for working across the boundaries of organizations and units, however, is our great weakness, the uncharted water. The infrastructure to "mind the gap" (as they say when you step onto the London subway) is fundamentally different than the infrastructure within a bureaucratic organization.

The infrastructure must be fundamentally different from most organizational structures: it must be based on inclusion and rooted in collaboration (not competition), distributed leadership (not authoritarian leadership), flexibility of processes and structures (not rigidity and repetition), and approaches to change appropriate for a turbulent environment (not only the linear models designed for stable environments). Competition, authoritarian leadership, rigidity, repetition, and linearity will not be eliminated but rather are expected to be in the background rather than the foreground of the new educational structure.

Further, the evolving infrastructure of the education system is likely to be less hierarchical, with a new consciousness of the significance of how and what we choose to standardize, what we leave to professional judgement, and what is allowed to be resolved through mutual adjustment within schools and communities. Mintzberg makes a compelling case that, as organizational work becomes more complicated, there is a shift from direct supervision to standardization of work processes, outputs, and/or skills, and finally to mutual adjustment.[6] Currently the educational reform discussions are heavily dominated by attention to "standardization of outputs" (student performance assessment) and standardization of skills (especially those of teachers and principals), but mutual adjustment -- among top-down, centralizing pressures; bottom up, decentralizing pressures; and middle-out, balancing pressures -- is increasingly a salient theme. We need to attend to the interplay of these forces as we seek a new infrastructure for education.

Task-oriented groups with cross-role membership drawn from sectors that have previously had little communication (boundary-spanning groups) and special forums for discussion and debate around the shaping of a common direction and vision will need to be increasingly used to bring parties together that have previously been isolated. This style recognizes conflict and manages it by letting the parties directly express their views to one another with the goals of mutual understanding and development of a meta-goal that advances all needs. These informal structures used in building the vision are also actually playing a role in flattening the hierarchies of the past and encompassing the groups that previously were seen as of minor or peripheral importance.

Now, in terms of what is taught, we expect that an education system more in keeping with today's world will continue to emphasize basic skills and content but that communication, problem solving, and thinking ability will be critical processes for all students -- and the adults who work with them. Indeed, basic and higher ability skills will not be taught sequentially, but in interplay, moving back and forth between the parts and the whole. Higher order thinking will be an integral part of the education of all students. Greater emphasis will be placed on synthesizing and gaining meaning from the mushrooming volume of available information and helping students develop schema to organize the bits and pieces that are an inevitable part of today's world. We would also see greater attention to the fundamental philosophies of a democratic society, again how individual parts combine to make a whole.

In terms of how teaching and learning occur, we see a future in which students are much more actively involved in learning rather than being the passive recipients of the techniques of today. For example, middle school and high school students are likely to be more involved in learning activities that also benefit their community. We would also see greater emphasis on cooperative learning.

These are examples of the issues that need to be debated as people within a state focus on developing a shared vision of the transformed education system appropriate for their state.

Developing a shared vision of a transformed education system is no simple task. As we have studied the literature on strategies of change for turbulent times, it appears that activities that help build the shared vision have some or all of the characteristics below:[7]

1. Multiple perspectives are presented to enhance understanding. People involved in different ways with education have markedly different views of the purposes, goals, and processes of education. These views need to be truly heard and understood by other involved parties as a first step in the transformation of our vision of education.

2. A core of well-regarded and capable people keep refining the best ideas of what the system should be both in terms of purpose/outcome and structure. Because it will not be immediately apparent what the system should look like in all its detail, a group of people needs to keep synthesizing and articulating the evolving view of the system to ensure that the vision is on course with the reality of the state's situation. This group of people needs to attend carefully to inclusion because all perspectives must be included in the development of a vision for a shared future.

3. People directly experience the type of learning and environment that is being espoused for use in the schools. To the extent that people can experience the new type of learning and environment and personally recognize how much more they can learn, the more likely it is that they will grasp the importance of the change. For example, if meetings are conducted where people are actively involved rather than passively observing, they can begin to see how the rate and nature of learning changes.

4. More and more people develop awareness and commitment. To establish a new norm for the education system, increasing numbers of people must become aware of and committed to the change. Careful communication strategies are needed to accomplish the adjustment in people's views.

5. Credibility is built through changing symbols and ways of talking about the schools. Public officials, other leaders, and respected citizens can be extremely influential in building credibility (or undermining credibility) by the way they use symbols and talk about schools.

6. New viewpoints are legitimized and tactful shifts are made at key moments. Leaders must understand how personal and organizational change typically proceeds and strategically legitimize new viewpoints to build the new vision.

7. Partial solutions are implemented to serve as building blocks. To the person unfamiliar with the overall change process, a partial solution can look very weak or unimportant. Yet if it is strategically undertaken within the context of a larger view of changing the education system, it can be very powerful in reshaping people's views of education.

8. Political support is continually broadened. Any major change in a system as broad and significant in society as the education system is going to affect the power base (real or imagined) of many people. People who feel they are losing power must be shown how they can adjust, avoid the loss in the new system, or even gain power, especially through developing a broader understanding of what constitutes power. As they adjust their perspective on power, they are more likely to give the necessary political support to the new approach.

9. Opposition is co-opted or neutralized. Some people may never be fully supportive of the new approaches. Leaders will need to move forward in ways that dampen their opposition.

Stimulating Productive and Meaningful Action

The building of a shared vision in and of itself typically begins to motivate people to action that will make that vision a reality. However, other stimulators of action are needed as well. We have identified at least 10 "energizers" that can be used to encourage productive and meaningful action.

Energizer 1: Harnessing self-interest. Many people act as though self-interest and the interests of the collectivity or organization are mutually exclusive. However, it does not have to be that way. Paying attention to what people want and what they are concerned about is a step in the direction of imagining the future.

Success in ameliorating an overriding problem is dependent on harnessing the energies of multitudes of individuals. What sparks engagement of a given person might be a task she or he needs to do anyway, a set of relationships that needs to be built or repaired, a desire for professional and personal growth, or just the prospect of having some fun; with any luck, it is a combination of all these. Most people want to do a good job, to have impact, so self-interest may even be engaged if individuals perceive an opportunity really to make a difference, to accomplish a larger purpose -- or vision.

Energizer 2: Compacting tasks. This energizer is an antidote to the busyness that takes on a life of its own. It is using the larger purpose to find linkages, overlaps, and concentricity that exist in the tasks of one individual and across the tasks of many individuals in the same domain. It is also packing more than one meaning into a task so that for a small amount of extra energy -- or none at all -- there can be a more significant outcome. The same kind of energy people put into negative games that undermine the direction can be put into positive games: getting two-fers, three-fers, and four-fers. This does not mean working harder or longer hours; it means working smarter, as the saying goes, or exponentially.

Energizer 3: Acting for cumulative impact. At the same time one focuses on compacting tasks, one should be assessing one's actions for their contribution to the overall goal. One needs to have an understanding of what others are doing so that each can adjust somewhat to ensure that the resulting whole is bigger than the parts, that each action magnifies the benefits of the others. Likewise, the result of each task needs to be seen as only a resting place on a journey to a future that is always slightly beyond our grasp. The tasks shouldn't be seen as ends in themselves.

Moreover, we have seen that multiple small actions can create a large effect, especially when the individual actions are taken strategically. For example, one vocational technical school in the Northeast recently assessed its offerings and decided that its priority for action was writing. Each member of the faculty -- from plumbing to science and math -- agreed to do two activities related to writing; it was reported to be the first time that the entire faculty agreed to do something jointly.

The faculty was amazed at the impact that the activities had on the students, who felt that the school was serious about writing. This gave them increased motivation to explore other activities, and they have organized a series of professional development activities to foster further steps.

In science, too, researchers have acknowledged the heretofore uncalculated but possibly very large cumulative impact of small actions.[8]

Energizer 4: Recasting conflict. The competitive world we live in leads us all to believe that there is only one right way, only one truth, only one winner, and so on. However, multiple perspectives remind us that each offers a version of reality -- each needing to be understood in order to build a metatruth. One can move from there to the kinds of action that will address the whole problem -- and all the stakeholders' shares of it -- rather than just one part of it. Multiple perspectives are a potent force because they offer us more information about an issue than any of us would have access to individually. Moving one's focus from battling out "which one is right?" to "what's the overall picture?" allows more energy to be concentrated on the problem and its solution. When that happens, the vicious cycle of winning and losing can be transformed into joint forward movement.

Energizer 5: Enabling communication. Communication is the main way we construct, reflect upon, and mirror reality; it is the major way we transfer meaning. We spend a lot of time these days collecting all types of data; much of it remains just that: "undigested, undifferentiated observations, unvarnished fact...."[9] We spend far more time "managing" (i.e., "coping with") data and information than we do analyzing or plumbing its depth.

Organizations overwhelmed by data are discovering that they can learn a lot about themselves and others by using sampling techniques for collecting data; they then spend proportionately more time setting the raw bits into context, giving them meaning that enables them to know more about less, which actually means knowing more.

Communications that enable are messages and processes that allow others to fit the parts to the whole, to see their individual actions and those of others in a new light; they are communications that successfully attach multi-dimensional meaning and significance to activities and tasks. Sensemaking is an example of an enabling communication.

Energizer 6: Fostering coherence by focusing on the larger meaning. This energizer helps to make meaning by encouraging people to find the larger connections among things rather than proceeding in bits and pieces. It is related to Energizer #2, compacting tasks, and Energizer #5, enabling communication, but is aimed at building a whole out of what might otherwise appear to be fragmented or unconnected activities. The central offices of successful school districts assist individual schools by weaving together disparate federal, state, and local initiatives into a coherent fabric of intents and actions. State departments of education facilitate the operation of districts and schools to the extent that they move beyond categorical to integrated action, with each policy initiative conceived and implemented as part of an articulated approach that guides statewide action.

Energizer 7: Transforming reactivity to proactivity. The use of cooperative power rather than coercive power spreads responsibility and control among the multiple players. Enabling leaders do not "give up" power; they multiply it by helping individuals focus on what they need to do for impact in their respective situations rather than for approval from some higher authority.

Energizer 8: Building knowledge and skills to undergird change. Successful improvement efforts are ones in which somebody has carefully measured the "amount of required change" -- that is, the gap between what is and what should be -- and has translated that into support and assistance for those involved. In almost all cases, this means professional development -- not scattered, one-shot, inspirational sessions, but knowledge and skill-development activities that are carefully targeted to the needs of both the organization and the individuals.[10]

Energizer 9: Modeling desired behaviors as the quickest way to produce change. This energizer has been captured in the expression, "walk your talk"; practicing what one preaches is not only good for one's internal consistency, it makes it possible to transfer quickly behaviors that are hard to talk about. For example, if people experience collaboration in a positive and useful way, they will be much more likely to consider collaboration in other settings. In like manner, teachers must themselves experience active learning before they can help their students to do the same.

Energizer 10. Creating productive collaborations. Collaboration of any kind, let alone cross-role or cross-organizational collaboration, is considered time consuming, cumbersome, task multiplying, resource fragmenting, not related to one's main work, and, to be frank, likely to result in credit either being diluted or going to someone else. Such perceptions are particularly likely to be held when one is looking through the lens of traditional hierarchical power. However, well-established collaborations can motivate and inspire people, generating new ideas that would not otherwise result. Therefore, collaboration is an energizer as well as being a basic theme of the strategy for rebuilding. Successful cross-role and cross-organizational collaboration has the following attributes:[11]

- Trust between partners based on interdependence: Trust comes from mutual recognition of a need for partnerships in order to accomplish goals. Participants must agree that a new opportunity requiring partners exists, and the organizations must have sufficient capability and maturity to develop systematic linkages.

- Authentic communication: It is essential to have a two-way exchange of information to enhance the public image of the partners, to encourage risk taking and to allow participants to learn from mistakes.

- Goals, tools, and purposes: Collaboration should begin with an analysis of the problem from multiple perspectives and the action needed to solve it. Resources available from the collaborators need to be determined. Goals should be defined, and it should be clear that results will be achieved more efficiently with partners than alone. The "big picture" behind the goals and purposes must be clear.

- Power used with mutual respect: Participants must be skilled in the collaboration process and overcome feelings of independence or dependency. There must be an equitable exchange among collaborators with visible and mutually enhancing outcomes.

Hindrances to effective collaboration include internal confusion and conflict that prevents successful trust building; territorial conflicts or incompatibility between partners' organizations; doubts as to the utility of the goals or vision or a high monetary, social, or "ego" cost; and poor performance history of some of the partners or little knowledge and few skills in the collaborative process.

Once energy has been stimulated, it needs to be guided to productive action. Although it is important to allow people the freedom to act as seems right for their situation, the orchestration of the process needs to use the energy to shape the consensus and coalitions that will make the shared vision a reality. It is important to:[12]

1. Solidify progress that has been made. Care must be taken to move to new activities that do not undermine the progress made by an earlier set of activities.

2. Create pockets of commitment based on positive results achieved. People need to see positive results to have a sense that progress is being made. The positive results motivate people to continue.

3. Manage coalitions to empower people at all levels. Reformers frequently talk of teacher empowerment, but systemwide change is highly unlikely unless people at all levels are truly empowered to carry out their responsibilities in ways that give them the sense that they are making the new vision a reality. Particular attention needs to be given to people such as school board members, community members, parents, superintendents, and principals. Coalitions can be extremely important in the empowerment process.

4. Find and reward champions. We are fortunate in education to have a history of recognition programs. These programs are just one tool that can be used in new ways to reward people who are playing significant roles in transforming the education system.

5. Erode consensus (yes, not all consensus is helpful) that interferes with the long-term dynamic process of improvement and renewal.

Implicit in the strategy of stimulating action is a very different notion of power and leadership than the authoritative, hierarchical one that exists in many organizations.

Many people are writing about the need for a change in our conception of power.[13] In the traditional view, power is defined as the probability that a person or group can enforce its will despite resistance. A finite amount of power is assured to exist -- some will have it and others will not. Some will win, some will lose. Competitive, adversarial, controlling, manipulative, directive -- these are the characteristics of interactions.

In situations where interdependence was of less importance, these approaches worked for many groups, organizations, and individuals. Control over individuals within an organization is possible; but exercising power over individuals outside one's organization or in a multi-organizational field is a major challenge, because sanctions are much more difficult to sustain. The view of power for today's interdependent environment is a mobilizing power, one characterized by leadership that creates an organizational vision, energizes people into action and emphasizes negotiating and bargaining to create win-win solutions, decentralized decisionmaking, worker involvement, and getting results. Here the "power comes from choice and cooperation rather than manipulation or control."[14] These are the ways of thinking about power that lead to the establishment of new norms and perspectives that can handle the stresses and strains of a turbulent environment and perhaps even reduce that turbulence.

Reflecting for Sensemaking

Individuals need to step back from the daily routine to reflect on a) the larger purpose of their actions b) the connections and fit between their actions and those of others and c) next steps. What we have called sensemaking is making time to do that. While individuals could (and should) engage in this behavior on their own, having multiple perspectives brings both more and different information to bear along with different sets of analytical and synthesizing skills. The result is a better reckoning, a more accurate reading on the situation than would otherwise be the case. Sensemaking operates on multiple parameters, then. It should include among other things: both global and linear thinking; big-picture and little-picture views; insider and outsider perspectives; past, present, and future orientations; oral and written communications; technical, psychological, sociological, and political insights; vision and task relationships; and multiple stakeholder perceptions.

It has been said that a concept is useful when it differentiates reality. Sensemaking is an occasion for bringing collective information and knowledge to bear on the subject at hand, the better to differentiate and therefore get a handle on that reality that swims all around us. It has a centering effect.

In the sensemaking process, we have found that it is especially crucial to ask the following questions:

1. Is the vision being refined and made more fitting for the situation? Are more and more people grasping its meaning and importance?
2. Are we expanding awareness and commitment to the vision?
3. Are we experiencing successes? Is what we are doing working? How do we know? How can we tell others?
4. Are we "minding the gaps?" Are we blending effectively the multiple perspectives?
5. Is the energy of people still at a high enough level to keep going?
6. Is empowerment of people at all levels occurring? Who is getting left out?
7. Are people throughout the effort learning to think better?
8. Are we attending to unanticipated consequences?

Using the Strategy

Using the preceding strategy is not easy. It requires people in a variety of roles both within and outside a state who are committed to building a new and self-renewing education system that can function in today's world in such a way that adults model behaviors that will help students better prepare to face the challenges of life.

Assuming that the strategy is to be applied within a given state to adjust that state's system, we propose that the approach used include at least three types of activities that typically are fairly weak or nonexistent in most states. These activities need to be undertaken in ways that begin to open up the hierarchical system, complementing and enhancing its valuable features while giving it the opportunity to shed the dysfunctional parts, the parts that should not be included in the new system.

The three activities are:

1. Establishing moderating and centering groups
2. Establishing system-linked pilot efforts at different places in the system
3. Modifying system characteristics

Moderating and Centering Groups

First of all, we recommend the establishment of what we refer to as "moderating and centering groups" -- groups where multiple views tend to moderate narrow perspectives and where people keep refocusing and centering on the shared vision being developed for the schools. We would see a number of such groups developed in a state -- some focused on statewide concerns, some on individual community issues -- with links among them in the form of individuals. Trist reports the operation of a number of such groups working on metaproblems in fields other than education.[15] Although we will not fully elaborate here on the features of a moderating and centering group or MCG, as we call it, we do want to point out a few critical elements. Based on the understandings gained about groups over recent years that are playing roles such as this, it is important that members of the group are well regarded by their role-group peers -- are opinion leaders -- and understand and can articulate well the views of their fellow role group members. On the other hand, they must be willing and able to adjust their perspective as they grasp more fully the changing nature of today's world and the views of other role group holders. And while the groups are relatively small, they are not exclusive; on the contrary, every effort is made to make sure no one is left out as the vision and actions are formulated. The meeting of multiple realities in a group where the norm is that of pushing for more and more creative and forward thinking is critical to breaking the barriers of the current limits of our structures, vision, and actions.

Indeed, the wide array of groups affected by education and already actively involved in attempting changes need to be represented in the MCG. It may take people outside the state to help identify the full range of groups that need involvement in the MCG, and it will take extensive discussions with people behind the scenes or uninvolved in the education bureaucracy to find the people who would be especially effective members of the group. Group members are likely to include teachers, students, community members, business people, principals, district staff, state and local school board members, legislators from both Houses and from leadership, finance and human services committees as well as education committees, state department of education personnel, higher education institutions, governing boards, the governor, and his/her staff. Many factors such as organizational representation, the daily duties of the people involved, and the mix of interpersonal skills need to be taken into account. Above all, the group must have a large number of individuals who are ready to move beyond narrow concerns of turf. As Cleveland describes,

> They are, by and large, men and women who are not preoccupied with formal power or getting their names in the newspapers, people whose concern exceeds their confusion and may even preempt their egos, because they are busy (and having fun) doing something that hasn't been done before. But what makes them the shock troops of the get-it-all together profession is, above all, their overriding concern for the general outcome of their efforts.[16]

Such a group is likely to be led best by a small steering committee of its own members with the involvement of a few people from outside the state who are well connected to what is happening in other states as other groups undertake changes in their education system. They also need to be well connected to a wide array of researchers and creative thinkers working on various factors that could have impact on how the education system might be effectively adjusted. These outside people also need to be able to help mobilize resources that can assist the MCG. These outside people should also be able to represent the developing work of the MCG to national networks and groups that are shaping the national and public view of how the education system needs to be transformed.

System-linked Pilot Efforts

Typically, pilot efforts operate as isolated activities within a school, district, or state agency and are treated as a "project" that can come or stay with little impact on the total organization or system. If the intent is to change the education system fundamentally, pilot efforts need to be designed in such a way that the pilot activities not only initiate changes in the targeted organization -- be it classroom or state agency -- but also inform and involve people in other parts of the system who need to modify their activities to create the climate necessary to support the new ways of operating. For example, it is important that the redesigned classrooms and schools are able to concentrate on the changes they need to make rather than having to spend considerable energy being at odds with the rest of the educational system.

In this sense, pilot efforts are not fragments of activity but microcosms of the vision, of the strategy we are proposing. They are like the fractals that have been discovered and described in the new science of chaos.[17] As a fractal, the strategy -- collaborative vision, action, reflection -- can operate from the macro-level down to the smallest behavior.

Recent work in one state illustrates the type of pilot design needed as a part of an overall effort to impact the system significantly. In this case, districts volunteered to participate in a consortium to enact a new vision of the skills, knowledge, attitudes, and attributes of all high school graduates. The vision had been developed by a broadly based group of educators and citizens. The districts participating in the consortium selected areas that would move them toward the new vision of a well-educated graduate. Personnel from the state department of education and regional service centers were also participants in the consortium, not to tell districts what they should do but to look at what they themselves need to do differently to collaborate with schools and districts to make changes throughout the education system.

Another approach is being used in several states where funds have been made available for schools to structure for better teaching and learning. In these cases, the unions, district, and state have to agree to waive any rules or regulations that the schools request. Such an approach then encourages the nonschool components of the education system to rethink how they need to restructure their activities and views of their roles and responsibilities.

Modifying System Characteristics

As the moderating and centering groups begin to grasp more deeply and fully the nature of the changes needed in the education system and as pilot efforts in schools and classrooms demonstrate more appropriate teaching and learning, the type of changes needed throughout the education system should start to become more apparent. Where to start in the complex maze of a highly intertwined system is no easy decision. There are many ways one could loosely segment the system to organize an effort to think through needed systemwide changes. We are currently using the following seven:

1. Assessment and accountability systems -- with emphasis on the content and reporting of student assessments and accountability for student learning

2. Staffing -- with emphasis on school leadership and teaching and on certification, selection, training, support, and redefinition of responsibilities to reduce incumbering bureaucracy

3. Resource allocation -- with emphasis on the levels of decision making and the match between state/desired priorities for student learning and where resources actually go

4. Curriculum and instruction -- with emphasis on the mix of basic and higher-level learning, the degree of active involvement of students in their own learning, and the alignment of instructional materials, student assessment devices, and priorities for student learning

5. Planning and innovation strategies -- with emphasis on how innovation can be sparked throughout the education system and become an ongoing characteristic of the education system and how planning activities at district and state levels can be used to move the education system strategically toward the new vision of what the system should be like

6. Special assistance -- with emphasis on having a balance of assistance to adjust not only technical aspects of the system (e.g., changing actual structures of the school schedule) but also social aspects (e.g., changing interactions among people) and political ones (e.g., changing the distribution of power among groups and individuals)

7. Parent/community involvement -- with emphasis on the choices parents have and the way the community and school work together to improve the community as well as to improve the school

Note that we have not divided these system aspects up in a way that says some are the responsibility of the schools, some the district, and some the state. Rather, we see all these aspects as needing to be looked at by groups of people who represent all of these levels. Each of these system elements is influenced by every level; it is looking at the connections (or disconnections) among levels that is likely to be especially informative in determining how to adjust the system.

Neither have we separated them by preschool, elementary, middle, secondary or other types of schools because these aspects need to be looked at across levels. Of course, once these system aspects are studied and reconceptualized in terms of how they support a new vision of how the education system functions, actions will need to be taken within the various state, district, and school units.

In many states, the functions and types of schools are not really connected to one another except bureaucratically. They tend to operate as nearly autonomous fragments without mutual adjustment either laterally or vertically. In other states, the functions are organized vertically -- or categorically -- so that, for example, curriculum people at the state level talk and work with others of their role type at the regional, district, and school levels. In only a few states is integration -- or horizontal connections -- manifestly a major concern. In such states, the individual specialists at different levels view their particular operations as part of a whole and are interested in the mutual adjustments that can be made to make the whole enterprise move forward. These are organizations where individuals are encouraged to pay as great or greater attention to the boundaries of their work -- where their tasks bump up against those of others -- and to think about the needs of others as they design and conduct their activities.

An example comes from one state where the testing and assessment people in the state department of education work closely with curriculum people to think about the impact of statewide tests on curriculum. The state likewise works closely with local districts to understand what they would like to learn from testing programs. Activities become user-centered rather than task-driven. Overarching all these strands of effort is a policy vision focused on achieving equity of schooling outcomes at high levels – higher order thinking, for example.

In the same state, a district and community, concerned that their curriculum was overcrowded, has undertaken what might be called a centering and focusing effort to determine what their real priorities are and how to configure for them. They want the experiences their children and young people have in school to constitute a whole rather than bits and pieces. For them, too, the components need to relate to the larger picture.

To proceed in this work, they are learning the skills of facilitation and participatory group process, learning effective ways to get everyone in on the act without having to have everyone at every meeting.

Even in such a state, cross-level, multi-organizational capacity and participatory processes are only minimally developed. For example, state or district agencies still too often act in their own self-interest rather than on behalf of all the stakeholders in education; they operate as paternalistic solution-givers, as though they are the only ones who can figure out the answer to the problem, rather than in a way that all perspectives become a part of the solution. In such a situation, as Peter Drucker has observed, "Each institution pursues its own specific goal. But who then takes care of the common weal?"[18] The answer is that we all must.

Here We Go

> None of us can expect to act on more than a tiny corner of the great complexity. But in our interrelated society, itself part of an uncompromisingly interdependent world, we have to think about the whole complexity in order to act relevantly on any part of it.[19]

The strategy we have described is neither a quick fix nor a one-shot effort. It must become an inherent part of the way we function. The strategy is one that cannot operate solely by communications up and down the formal hierarchical or bureaucratic lines. It is highly dependent on effective, authentic, trusted communications among peers working in a variety of settings and among people with differing roles where each is viewed with respect and with a responsibility to change in ways that increase the understanding and actuality of the new vision of the education system.

Such communication is especially important in times of major transition because many people are trying new approaches and gaining insights to both anticipated and unanticipated consequences of actions, implications for consequences of actions, implications for next steps, and conditions that affect success that need to be personally shared and discussed. Of course, "diseases" can also spread quickly among groups. Thus, key people in the groups must be asking tough questions and thoughtfully probing to ensure that experiences and ideas transmitted via the groups are critiqued and viewed from multiple perspectives.

The above activities all need to be operating simultaneously and strategically as the change effort proceeds. These activities are, of course, not the only ones that need to be undertaken, but they are essential ones that are frequently not put in operation because they are not a regular part of the existing hierarchical system.

So to answer the questions that readers may have about next steps, we can say that the place to begin is where you can, with the people who are affected. While this paper reflects on the issue more than it offers specific strategies for forging ahead, we have tried to offer some helpful suggestions, (e.g., the 10 energizers to action in the first part of this paper). And we can assure you that our visions and reflections are based in large part on our first-hand knowledge of real action in several states by committed individuals. To join them, the only initial obligation is to desire to go "beyond cowboys and Indians," beyond turf issues, beyond individual self-gain, to see the intersect of many diverse interests in a shared future. It's the obvious choice.

Let us emphasize that a strategy to focus on the shared future is not a do-good approach. It is pure pragmatism. We have run out of room to move on, leaving behind problems for others to deal with. The rallying cry at the time of the American revolution -- that we must all hang together or else we shall all surely hang separately -- is more compelling today than it was then. Our new frontier is bringing the inter-personal, the task, and the larger purpose together as we enact the future.

Footnotes

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A PROCESS ANALYSIS AND DESIGN METHODOLOGY FOR THE IMPROVEMENT OF ORGANIZATIONAL EFFECTIVENESS IN SCHOOLS

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Abstract

Living Systems Process Analysis is a methodology that enables one to assess operational deficiencies and strengths in any type of organization by analyzing its critical information and matter-energy processes. The major advantages of the methodology are: (1) it enables one to examine a very large number of organization management functions and performance variables simultaneously, (2) it provides a framework for synthesizing and interpreting the complex interactions of these functions and variables regardless of the organization's specific goals, activities, or products, and (3) it yields both qualitative and quantitative performance data that facilitate important followup in designing and planning improvements. This paper describes a current research effort to develop and refine Living Systems Process Analysis as a methodology for assessing school effectiveness. It also describes a design component that could enable school personnel to use process performance data in designing and implementing systemwide school improvement.

Introduction

Living Systems Theory (Miller 1978) postulates that we can characterize any biological or social system by the way it processes information and matter-energy. In organizations, effective information processing and use of matter-energy (i.e., resources in the form of personnel, money, materials, and facilities) are postulated as critical to an organization's survival and indicative of its overall health or quality. Living Systems Theory is a useful model for both analyzing organizational performance because it provides a framework of important processes and variables for measuring quality and effectiveness.

Living Systems Process Analysis, initially developed by Ruscoe and associates at the University of Louisville (Ruscoe et al. 1985), is a methodology intended to make the critical processes and process variables of Living Systems Theory operational. The methodology is based on the theoretical perspective that variations in organizational performance and effectiveness are reflected in differences in the ways critical information and matter-energy are processed. Thus, analyzing these processes, a researcher or a manager can assess operational strengths and weaknesses in any type of organization. The major advantages of this analysis methodology are that (1) it enables one to examine a very large number of organization management functions and performance variables simultaneously; (2) it provides a framework for synthesizing and interpreting the complex interactions of these functions and variables regardless of the organization's specific goals, activities, or products; and (3) it yields both qualitative and quantitative performance data that facilitate important followup in designing and planning improvements.

Our purpose here was to improve the capacity of school administrators and staff to engage in building-level performance assessment and improvement design. To do this, we adapted Living Systems Process Analysis and made it more operational for use in schools by: (1) identifying quantitative measures for assessing systems processes and functions, (2) developing suitable data collection instruments, and (3) designing a followup methodology that utilized critical process data as a basis for school improvement design and planning.

The Compatibility Problem Between Organizational Research and School Research

At the beginning of our research effort, we identified three general shortcomings of previous school research that motivated us to choose Living Systems Theory as a useful model for analyzing organizational effectiveness in schools: (1) school effectiveness research had, by and large, ignored the significance of information processing variables as key determinants of success; (2) a lack of quantitative process models and methodologies useful for school effectiveness assessment existed; and (3) researchers had failed to develop compatible models or theoretical frameworks for comparing organizational effectiveness data from school and nonschool settings. I elaborate briefly on these shortcomings below.

Information-Processing Variables Ignored

For over three decades, organizational researchers have paid considerable attention to information-processing variables. A review of the literature during this period reveals that the information processing facets most frequently discussed and investigated are directionality of information flow (Crane 1967, Graves 1972), accuracy and distortion of information (Crane 1967, Erickson and Pedersen 1966, Killworth and Bernard 1976, Mehrabian and Reed 1968, O'Reilly and Roberts 1977, Read 1962, Wilensky 1967), clarity and ambiguity of information (Crane 1967, Daft and Macintosh 1981, Eilon 1968, Erickson and Pedersen 1966, Melcher and Beller 1967, Rader 1981, Roberts and O'Reilly 1974), modalities used in transmitting information (Eilon 1968, Lawler, Porter, and Tenenbaum 1968, McCleary 1968, Roberts and O'Reilly 1974), and openness of information flow and gate-keeping mechanisms (Davis

1968, Erickson and Pedersen 1966, Melcher and Beller 1967, O'Reilly and Roberts 1977, Roberts and O'Reilly 1974, Rosen and Tesser 1970, Russell 1982, Schmuck, Runkel and Langmeyer 1969, Valentine 1981).

In addition, researchers have been keenly interested in information-processing models. This interest appears to be based on (1) an increasingly accepted view of organizations as information-processing systems (Argyris and Schon 1978, Connolly 1977, Galbraith 1977, Huber, O'Connell and Cummings 1975, Miller 1955, Morgan 1986, Porter and Roberts 1976, Simon 1947) and (2) a recognition that to survive, an organization must be able to make accurate assessments of its relevant environments (Thompson 1967), process information to make decisions (Cyert and March 1963), and coordinate and control its subunits and members (Galbraith 1977, March and Simon 1958, Weick 1976). From these perspectives, the capability to receive, process, and transmit information become at least crucial if not the most essential organizational functions.

Despite the growing interest among organizational researchers in information-processing variables and models as a way of explaining or differentiating organizational effectiveness, school researchers -- as evident from recent summaries of research -- have tended to account for differences in organizational effectiveness by an incongruous mixture of structure, process, and outcome related variables. School researchers have also failed to develop underlying theoretical perspectives for these variables, provide adequate accounting, or develop useful measures for important information-processing variables. For example, typical summaries of school effectiveness research have identified the following determinants or factors:

o Instructional management -- time on task (Block 1980, Fisher et al. 1980), class size (Filby et al. 1980, Glass and Smith 1978, Smith and Glass 1979), curriculum alignment (Levine and Stark 1982), curriculum content and organization (Purkey and Smith 1983), evaluation/feedback mechanisms (Brophy and Good 1974), and learning task characteristics (Bossert et al. 1982).

o School climate -- staff expectations (Brookover and Lezotte 1979), staff task orientation (Rutter et al. 1979), discipline (Rutter et al. 1979), safety (Rutter et al. 1979), staff cooperation/consensus (Purkey and Smith 1983), instructional leadership (see below), staff development (Purkey and Smith 1983), and parent participation (Armor et al. 1976, Purkey and Smith 1983).

o Instructional leadership -- setting instructional goals, active participation in decision-making, active participation in school coordination and control processes, and effective human relations (Bossert et al. 1982).

Although many of these determinants are obviously related to information-processing, researchers did not study this relationship in any deliberate way nor, in many cases, even make it explicit. Given the prominence of information-processing variables and models in the larger arena of organizational research, it appears that little knowledge has transferred from organizational research in nonschool settings to school effectiveness research.

Lack of Quantitative Process Models and Methodologies

Research on the relationship between information-processing and organizational effectiveness has for the most part produced only descriptive models and qualitative measures. For example, the organization research literature provides many general prescriptions and strategies for improving or assessing information, communication, and decision-making processes without presenting specific performance criteria or quantitative performance indices by which one could accomplish such assessment (cf. Erickson and Pedersen 1966, Melcher and Beller 1967, Rader 1981, Russell 1982). Several reasons for this dearth of quantitative measures have been suggested, including the difficulty of measuring processes versus the relative ease of measuring static (structural or outcome) variables (Roberts and O´Reilly 1974, Scott 1977), the prohibitive amount of time and energy required to measure process variables (Farace and MacDonald 1974), and the tendency in Western cultures to favor outcome rather than process assessment (Morgan 1986).

An obvious need exists for more quantitative methodologies that analyze organizational effectiveness processes. The development of such methodologies will, I believe, lead to more useful process-performance models that can then guide or facilitate research in a variety of organizational settings.

Lack of Compatible Theoretical Frameworks and Models

The study of organizational effectiveness in nonschool settings and the study of effective schools seem to have progressed along different paths. This has resulted in concepts and measures for analyzing organizational structures, processes, and outcomes that are incompatible.

In organizational research, investigators have suggested the need to develop standard process measures that they can then use for assessing different types of organizations (Roberts and O´Reilly 1974), standardized instruments and scales to measure specific dimensions of information-processing (Daft and Macintosh 1981), and common frameworks for comparing information-processing variables or for analyzing and interpreting types of organizational problems (Banathy 1984, Brown 1966, Farace and MacDonald 1974, Melcher and Beller 1967).

In school research, a clear need is present to develop theoretical models that relate information-processing variables to well-publicized school-effectiveness factors (e.g., instructional management, school climate, effective leadership), to typical outcome measures (e.g., tests of student achievement, principal and teacher performance assessments), and to multilevel interactions between district, buildings, and classrooms.

Finally, we need to develop theoretical frameworks, methodologies, and measures useful to both organization and school-focused research in order to reduce the problem of noncomparability. Such compatibility would promote better transfer and use of knowledge between the two research streams.

I believe that Living Systems Process Analysis offers several advantages that overcome the three general shortcomings in school research to date.

- Living Systems Process Analysis provides a methodology that fills two important needs in school based research: (1) it describes and measures important information and matter-energy processes that determine school effectiveness, and (2) it facilitates multilevel analyses of school effectiveness (i.e., district support, building operations and management, and classroom instruction and learning) since the critical processes apply equally at all three levels.

- Living Systems Process Analysis readily lends itself to the development of both qualitative and quantitative measures since the theory postulates 19 generic information/matter-energy processes and 36 generic process performance variables. These generic processes and process variables are useful as a basis for identifying related organization specific functions and variables and for devising appropriate assessment instruments.

- The critical information and matter-energy processes of Living Systems Theory considered to exist in all organizations, should provide a suitable framework and basis for developing compatible performance indicators and measures for all types of organizations. Previous applications of Living Systems Theory and Living Systems Process Analysis reported in the literature (see below) seem to bear this out.

Applications of Living Systems Theory in Nonschool Settings

Interest in general systems approaches and methodologies for analyzing and evaluating organization performance has been growing over the last several decades so that this focus is no longer limited to a few scholars or researchers. Today, systems approaches and methodologies for analyzing organizational effectiveness are increasingly sought after and used by social scientists, operations researchers, economists, and managers in government, military, business, and community organizations.

Similarly, Living Systems Theory and its potential applications are drawing increasing interest from scholars, scientists, administrators, and managers in a variety of disciplines and organizational settings. For example, this theory has already been instrumental in the following applications: the social service field (Hearn 1958); in modeling, analysis, and evaluation of community mental health and health delivery systems (Baker and O´Brian 1971, Bolman 1967, Burgess, Nelson, and Wallhaus 1974, Pierce 1972); as a framework for assessing program effectiveness in community life (Weiss and Rein 1970); for the general study of organizations (Lichtman and Hunt 1971); to explain certain pathologies in organizations (Cummings and DeCotiis 1973), and in the development of corporate management seminars (Duncan 1972, 1975).

More recent research efforts attempt to develop a general methodology and instrumentation for applying Living Systems Theory to analyzing organizational effectiveness. This effort began in 1978 with a series of studies that attempted to make the theory operational for use in U.S. Army battalions. One outcome of these military studies was the development of research instruments and techniques collectively called Living Systems Process Analysis. The process analysis is a methodology for collecting, analyzing, and interpreting organizational performance data obtained by examining the 19 critical information and matter-energy processes of Living Systems Theory. A joint team of researchers from the Systems Science Institute of the University of Louisville and the TRADOC Systems Science Research Element of the U.S. Army developed the process analysis to examine the purpose of examining the operational effectiveness and combat readiness of army battalions. Using this methodology, researchers could identify various strengths and weaknesses in battalion information-processing and compare them on the basis of their information-processing efficiency (Merker and Ruscoe 1981; Peter and Ruscoe 1981; Ruscoe 1981a, 1981b, 1981c, 1982; Ruscoe et al. 1985; Ruscoe, Giguet, Brown, Burnside, and Cary 1979).

Because these studies were generally successful in showing significant relationships between the battalions´ operational effectiveness and living systems critical processing, researchers undertook subsequent studies using process analysis. One explored U.S. Army combat simulations (Miller, Banathy, Cary, Fell, and Burkhalter 1984), while two others examined a large metropolitan transportation system and a hospital (Merker 1985). The military studies, the transportation and hospital applications also found significant relationships between living systems information-processing and perceptual measures of organizational effectiveness. Though the two studies employed small numbers of respondents and neglected to use corroborative outcome measures (as were used in the U.S. Army studies), one could reasonably conclude that the data showed promising evidence of how useful Living Systems Process Analysis could be in cross-organizational studies (Merker 1985).

School Feasibility Study

In 1984-85, the Far West Laboratory conducted a feasibility study to determine if Living Systems Process Analysis (LSPA) could be adapted for use in analyzing school effectiveness (Mills 1985). We developed a questionnaire and two surveys to measure critical information processes using the same six process-performance variables the U.S. Army battalion study used (i.e., volume, cost, clarity, usefulness, accuracy, timeliness). Our study did not examine critical matter-energy processes, however. Next, we selected 12 elementary schools that were divided into two groups based on high or low reputations for overall excellence within their respective districts and on high or low overall student achievement scores. We then administered the questionnaire and survey instruments and analyzed the data. The results showed significant differences between high and low groups in information-processing performance. More specifically, we obtained significant differences between high and low schools on 8 of 9 critical information processes when measured against four management areas (i.e., curriculum planning and development, inservice training, instruction and classroom management, staff supervision and support). Furthermore, we also found significant differences between high and low schools for all 6 process-performance variables.

Based on this school feasibility study and the findings of the U.S. Army, hospital, and transportation studies, we concluded that LSPA does indeed have potential as a methodology for analyzing critical processing performance in a variety of organizations. We realized, however, that a more comprehensive and quantitative set of LSPA measures -- using, for example, all 36 performance variables postulated by Living Systems Theory -- would still need to be developed in order to assess and diagnose more accurately management and operational problems that impede school effectiveness.

I next describe the research effort to develop a more accurate, quantitative LSPA methodology and to extend that methodology to include improvement design as well.

School Effectiveness Assessment

In 1986, supported, in part, by a grant from the National Science Foundation, the Far West Laboratory undertook further research to develop a quantitative process analysis methodology for assessing school effectiveness. This involved the following major tasks: (1) making generic living systems processes and process indicators (variables) operational for application to schools and (2) developing suitable data-collection instruments and data-analysis procedures that would enable school personnel to diagnose strengths and weaknesses in school operations.

Operational Process-Analysis Measures

Living Systems Theory describes 19 critical subsystems: nine that process information (input transducer, internal transducer, channel and net, decoder, associator, memory, decider, encoder, and output transducer); eight that process matter-energy (ingestor, distributor, convertor, producer, matter-energy storage, extruder, motor, and supporter); and two that process both information and matter-energy (reproducer and boundary).

We made these subsystems operational for application to schools as the following 15 critical processes:

- Acquiring Information (input, internal transducer) -- bringing information into the system and receiving information from components within the system. Examples include requesting, locating, monitoring, observing, identifying, measuring, updating, conducting inventories.

- Screening Information (boundary) -- protecting the components of the system from environmental stresses by selectively either excluding or permitting information entry. Examples include ignoring, filtering, confirming, verifying, routing, restricting.

- Translating Information (decoder, encoder) -- altering information inputs from outside the system for use within the system and altering information from within the system for use outside the system. Examples include restating, interpreting, summarizing.

- Communicating Information (channel and net, output transducer) -- providing routes for transmitting information to all parts of the system and transmitting information from within the system over channels into the systems's environment. Examples include sending, circulating, using channels, reporting, presenting, providing feedback.

- Storing and Retrieving Information (memory) -- storing information in the system for different periods of time. Examples include filing, recalling, retrieving.

- Analyzing Information (associator) -- carrying out the learning process by forming enduring associations among items of information. Examples include reviewing, specifying, defining/redefining, organizing, grouping, sorting, comparing, classifying, analyzing, evaluating, predicting, projecting.

- Applying Information (decider) -- receiving information inputs from all system components and providing outputs for guiding, coordinating, and controlling the system. Examples include choosing, selecting, setting goals/objectives, establishing priorities, planning, scheduling, designing/redesigning, solving, resolving, approving, recommending, implementing, recognizing, providing encouragement, regulating, controlling.

o Acquiring Resources (ingestor) -- bringing resources into the system. Examples include receiving, hiring, transferring, ordering, replenishing, replacing, upgrading.

o Screening Resources (boundary) -- protecting the components of the system from environmental stresses by selectively excluding or permitting entry of resources. Examples include ignoring, protecting, routing, restricting.

o Distributing Resources (distributor) -- carrying inputs from outside the system or outputs from within the system around the system to each component. Examples include providing, sharing, allocating, restricting, shifting, discriplining, providing material rewards or incentives.

o Creating and Adapting Resources (converter) -- changing resource inputs into more useful forms. Examples include making, building, producing, transforming, modifying, changing, upgrading, creating, adapting.

o Using/Maintaining Resources (producer) -- synthesizing system inputs or converter outputs for purposes of growth, damage repair, or component replacement. Examples include reproducing, duplicating, using, applying, maintaining, repairing.

o Storing/Retrieving Resources (matter-energy storage) -- storing resources over time and retrieving them. Examples include storing, supplying.

o Transmitting Resources (extruder) -- sending resources out of the system as products or waste. Examples include shipping, sending, removing, discarding, transferring, turning over.

o Maintaining Spatial Relationships (supporter) -- maintaining spatial relationships between system components so they can interact properly. Examples include physical layout and arrangement, component separation, pathways.

Since the feasibility study was our first attempt to make LSPA operational for use in schools, we had been guided primarily by the research methods and instrumentation the University of Louisville and Army Research Institute used in their groundbreaking study on U.S. Army battalions. We subsequently concluded, though, that the feasibility study was somewhat limited for two reasons: (1) we had only attempted to question school personnel about critical processes generally without relating these processes to more familiar and specific school contexts and functions; and (2) our attempt to measure complex information processes using only six performance variables lacked in depth. We resolved to correct these deficiencies by making the following improvements.

o We expanded the analysis to include all 9 information processes, all 8 matter-energy processes, and one information/matter-energy process postulated by Living Systems Theory.

o We increased the pool of variables used to measure the performance of critical information and matter-energy processes from 6 to 44, thereby using all 36 of the generic variables Living Systems Theory postulates plus additional variables the organizational research literature suggested to us.

o We developed a specific set of data measures that related critical processes directly to 16 key management areas that are familiar to school personnel and of major concern to school administrators and teachers. These key management areas are:

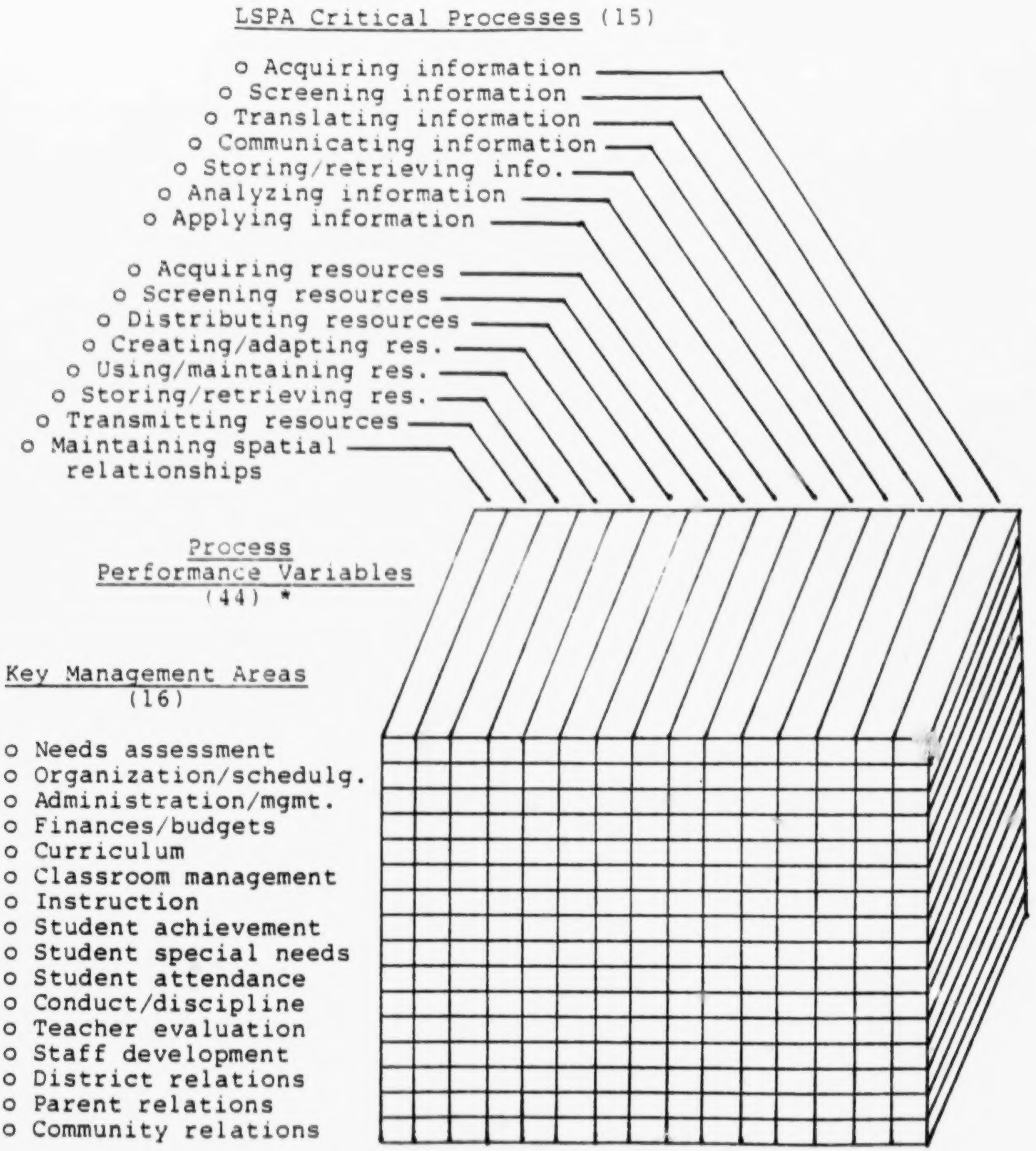
- School needs assessment
- School organization and scheduling
- Administrative/management practices and methods
- School finances and budgets
- Curriculum content, scope, and sequence
- Classroom organization and management
- Instructional methods and procedures
- Student achievement
- Student special needs
- Student attendance
- Student conduct and discipline
- Teacher evaluation
- Staff development
- Relations with district
- Relations with parents
- Relations with community/outside agencies

Generally speaking, the process analysis is carried out by analyzing critical information and matter-energy processes as they relate to these 16 key management areas.

Figure 1 presents a graphic overview of the school-focused process analysis.

Figure 1

School-Focused Living Systems Process Analysis



* The number of process variables examined in assessing a particular critical-process/management-area "cell" will vary.

Data Collection Instruments and Procedures

We initially developed two types of data collection instruments -- an interview questionnaire and a rating questionnaire -- that conformed to the requirements of the process analysis described above.

- The interview questionnaire asked respondents to provide qualitative information about key school management areas. The open-ended questions were intended to provide a variety of background details about school operations and processes that we could use to interpret the quality of critical information and matter-energy processing.

- The rating questionnaire asked respondents to provide quantitative data about familiar school management activities and operations as they related to the critical information and matter-energy processes. The rating questionnaire used 5-point Likert scales, each tailored to a specific school activity and process variable (e.g., adequacy, clarity, cooperation, frequency, importance, difficulty, reliability, and so on.)

Project staff developed the two questionnaires in prototype form and revised them several times before presenting them to educators for review. The reviewers were school principals and teachers representing elementary, intermediate, and secondary levels. As a result of these reviews, we discarded the open-ended interview questionnaire, revised many of its items, and incorporated them in various forms into the rating questionnaire. The primary reasons for combining the questionnaires were to reduce the response time and burden to school staffs and to simplify the data analysis and interpretation process to both the Laboratory and school staff. The expanded questionnaire now includes 110 data items of three types: performance ratings, check-off options, and percentage estimates.

The procedure for administering the questionnaire to school staff is similar to that used in the feasibility study. School staff are given a standard introduction and instructions for completing the questionnaire. After all their questions are answered, they are asked to fill out the questionnaire and are told not to discuss their answers with anyone during the process. They are allowed to skip items that they are unfamiliar with or do not understand. If time is short, they are given the option of completing the questionnaire at home and returning it to a designated person at the school the next day.

School performance data from the critical process analysis are prepared and presented in composite graphs -- one for each critical process -- which display average ratings (means) and degrees of agreement (standard deviations) for all staff. The data obtained from the checkoff option and percentage estimate items are used to provide further details and understanding about school operations but are not displayed in the composite graphs. All three types of data items -- ratings, checkoff options, percentage estimates -- are used in followup data analysis and interpretation activities with school staff.

School Improvement Design

The process analysis component described above is intended to enable school personnel to pinpoint strengths and weaknesses in key school functions and operations and to identify overall improvement needs and goals. A followup design component, however, is also needed to enable school personnel to use the analysis findings to develop a feasible plan for systemwide school improvement.

Improvement Analysis and Design

Critical process analysis and improvement design must be integrated into a coordinated process that can guide staff actions for school improvement. The process involves at least the following stages:

- Stage one -- Prepares school staff for improvement analysis and design. This involves introducing the principal and faculty to the requirements for school improvement design, selecting a design team and team facilitator, and ensuring staff understanding of and support for design activities.

- Stage two -- Examines current and future school needs for improvement. This involves assessing strengths and weaknesses in school operations (building management, instruction, and learning), and identifying educational trends and issues that affect the community and school system and that will be addressed in the school improvement effort.

- Stage three -- Specifies system ideals and overall goals for school improvement and specifies components (structures and processes) that achieve those goals. This involves examining possible system configurations for a more ideal school and specifying key functions and resource requirements (personnel, materials, finances) for the new system.

- Stage four -- Tests the general feasibility of the new system. This involves analyzing obstacles and barriers to creating the new system and either specifying strategies/arrangements for overcoming those barriers or modifying the ideal system specifications to bring them in line with reality.

- Stage five -- Specifies the management subsystem for carrying out the key functions of the new system. This involves identifying role responsibilities, accountability criteria, and quality control arrangements that will ensure desired system performance.

- Stage six -- Develops a plan for implementing the new system. This involves setting short- and long-term priorities for action, devising timelines or schedules, assigning specific responsibilities, allocating resources, and obtaining required approvals and support.

- Stage seven -- Implements the action plan. This involves ongoing monitoring and assessment of the implementation process, adjusting or refocusing key system components to keep them within desired performance limits (tolerances), and continued planning and development of other system components consistent with priorities and the implementation schedule.

Modes for Improvement Design

The level of effort required for school improvement design will depend, in part, on the findings of the critical process analysis, in part, on the importance of other types of "information" school personnel consider in setting priorities for change (e.g., test scores, parent concerns, board policies, school budgets, and so forth), and, in part, on sustained staff interest and motivation to achieve needed change.

After they have assessed their school's current level of performance and considered a more ideal system state, staff are likely to choose one of three possible design modes that will focus and guide their subsequent school improvement efforts. We are designating the three possible modes for school improvement design as maintenance, adaptation, and restructuring. The general assumptions and aims for each mode are as follows:

- Maintenance design would be selected when the performance analysis indicates that school operations are more or less adequate and that only fine tuning is needed for further improvement. Typical design concerns in this mode would be: How can we improve school effectiveness by maximizing operational strengths and eliminating weaknesses? How can we improve the efficiency of school operations and yield better results?

- Adaptation design would be selected when the performance analysis indicates that school operations are deficient and require correction or realignment to meet current needs and goals. Typical design concerns would include: How can we refocus or realign school operations to better meet existing needs or established goals and standards?

- Restructuring design would be selected when the performance assessment indicates that current or emerging needs cannot be achieved through existing school operations and structures and that major restructuring (or redesign) is indicated. Typical design concerns would include: What should this school be doing and how should the school be doing it? How can we achieve more desirable goals and performance levels consistent with a changing environment? How can we restructure the school to achieve a more ideal system state, longer-term goals, and higher aspirations?

Testing the Analysis/Design Methodology

The process analysis and improvement design components are currently being developed and pilot tested in a large suburban high school. Further development and testing in elementary schools is being planned for 1989. Essentially, we are testing the utility of critical process analysis as a vehicle for assessing strengths and weaknesses in school operations. We are also developing and testing processes that will help school staff engage in followup improvement design.

Goals and Assumptions for the Project

The overall goal of this research is to develop a comprehensive, multilevel system for school improvement analysis and design. Towards this end, we have initially developed and are currently testing a methodology for building-level assessment and design. We are also developing a district-level assessment component that will enhance the building-level component. Once fully developed and tested, the methodology will provide school staffs with the guidance they need to engage in school improvement design and to develop the internal capabilities and support systems that will sustain their improvement efforts.

The approach we have taken in this research project has evolved from certain basic assumptions about school change and reform that are supported by the research literature as well as our own experience. These assumptions are as follows:

o To be effective, reform must be initiated from within the school; it cannot be mandated from outside. Therefore, school staff must be sufficiently committed and prepared to engage in improvement design and implementation over the long haul.

o Since staff know the most about their school operations, they are in a better position to interpret critical process data and relate these data to school problems and needs than any outside "experts." Therefore, the role of outside experts and consultants should be to support or facilitate staff efforts to determine their own school improvement needs rather than to determine such needs for them.

o School improvement analysis and design involves a systems and process orientation that may be foreign to staff´s normal way of thinking about school problems. Therefore, staff need to apply skill, patience, and self-discipline to undertake the analysis/design process and to avoid the short-term thinking and single issue or variable problem-solving typical of many school improvement efforts.

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BIOGRAPHICAL DATA

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The Search for Meaningful Reform:

A Third-Wave Educational System

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Abstract

It is widely recognized that our educational system has some important shortcomings. This paper proposes that such "problems" as lack of teacher incentives, poor student motivation, lack of leadership, and lack of community support are in fact just effects of a more fundamental problem. Just as the one-room schoolhouse, which was so appropriate for an agricultural society, proved to be inadequate for an industrial society, so our present system is proving to be inadequate for an information society. It is the structure of our educational system that is at the heart of our current problems. For example, it is our group-based, lock-stepped, graded, and time-oriented system that has the dubious distinction of effectively destroying the inherent desire to learn in all but a small percent of our children. Furthermore, micro computers are accelerating the trend toward increased use of nonhuman resources in the education of our children, and the current structure of our educational system cannot adequately accommodate the effective use of these powerful educational tools. But what alternatives are there? Until recently there have not been any viable ones, but our pedagogical knowledge has now evolved to the point where there is a viable alternative to the present structure. This article describes a general approach and a specific strategy for effecting the needed structural changes, and also describes some initial progress on implementing that strategy. This initial progress is a preliminary "blueprint" outlining the structural characteristics that a "third-wave" educational system should have.

There is a growing lack of confidence in our present public school system. Time Magazine has said,

> Like some vast jury gradually and reluctantly arriving at a verdict, politicians, educators, and especially millions of parents have come to believe that the U.S. public schools are in parlous trouble.[1]

The Chronicle of Higher Education reports that educators and noneducators alike are calling for sweeping reforms of America's public schools.[2]

The recent National Commission on Excellence in Education was created because of "the widespread public perception that something is seriously remiss in our education system."[3] The Commission's report, entitled "A Nation at Risk: The Imperative for Educational Reform", cited Paul Copperman as drawing the conclusion that "for the first time in the history of our country, the educational skills of one generation will not surpass, will not equal, will not even approach, those of their parents."[4] The Commission concluded that, "if an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today, we might well have viewed it as an act of war."[5] As Paul Berman has recently noted, "The debate is no longer over whether American education is in trouble, but over what should be done."[6]

What Is the Cause of Our Problems?

Before we can identify what should be done, we must identify the causes of the current problems with American education. The Commission cited poor content (we are teaching the wrong things), insufficient learning time (we are not teaching it long enough), poor quality of teaching (we are not teaching it well enough), low standards and expectations (we are not demanding enough from the students), and lack of leadership (we are not getting the kinds of initiative and direction that are needed from our administrators). But are these really the causes? Or are they symptoms of a more fundamental cause? Two things may be helpful to answer this question: (1) analyzing what goes on in a typical school and (2) looking at ways of improving systems in general.

Imagine you are a high school teacher. You want very much to excite your students about learning. How are you going to go about it? You have been handed a list of over a hundred students in four classes. You have a textbook that you are required to use and a year-end exam for which you need to prepare the students, so that all but a few minutes of class time per week must be carefully scheduled in advance. On the first day of classes, twenty-five or thirty students will troop into your classroom at the ring of a bell and will troop back out 40 minutes or so later at the ring of another bell, regardless of whether or not the great moment of insight you have spent the entire class working up to is still two minutes away. The students will come into your class with very different levels of knowledge about your subject; most will not be very interested in it; and practically all will be hoping to be entertained more than educated. You don't really know anything about any of those students as individuals, so you are forced to focus your attention on the content and how you will deliver it to the "average" student in the class, rather than focusing on the individuals you are teaching and how you can address the needs and interests that each of them has.

Is a longer school day really the solution to your problems? Or better teacher training? Or higher expectations? Will such reforms help to sustain a love of teaching in the teacher or to instill a love of learning in the students? Milbrey McLaughlin and associates at Stanford University have noted:

> Many of the current reform efforts aimed at improving the quality of teachers fail to consider the configuration of conditions that leads even the most dedicated teachers to experience demoralization and a sense of personal failure. Indeed, some of the organization and environmental features that contribute most prominently to this sense of failure are also basic aspects of the current system of education in the U.S.[7]

Similarly, Willis Hawley notes that "Motivating teachers without changing other conditions that affect teaching will not only limit the effect of incentives, but may cause frustration and alienation."[8] During my years as a high school teacher, I came to understand what many teachers have complained of: that the *structure* of the education system is the root cause of most of the problems that beset our educational system.

What do we mean when we refer to the "structure" of our educational system? The structure is the basic organization of the teaching process. The major structural aspects of our present system include (1) *group learning*: having knowledge delivered to children in groups of 20 to 40 at a time, such that all children receive the same content at the same time and rate; (2) *constant rotation*: rotating the children from one teacher to another every 45 minutes or so; (3) *time based levels*: requiring all children to "serve" the same amount of time before they are allowed — or forced, as the case may be — to progress to new levels of learning, regardless of when (or even if) they have mastered all the necessary knowledge and skills, (4) *isolation*: having all learning occur within the confines of the school walls and not encouraging (nor usually even allowing) parents or other segments of the community to participate and cooperate in the teaching process; and (5) *administrative organization*: having a single large school in a district, with administrators who are not also teachers and teachers who are relegated to a less influential and professional "staff" role within the educational system.

Of course there are other causes of our problems besides the structure of our educational system. Bad teachers do exist, lack of parental concern for their children does exist, and so forth. But there is increasing recognition that the *major* cause of the current problems with our educational system is the basic structure of that system. Theodore Sizer states:

> Can students learn how to learn to "study, " when they are rushed from class to class over a seven-period day, where they are being taught by six or seven different teachers, no one of whom sees them more than five hours per week (and usually in groups of over 20 students), and when there is rarely any unequivocally reserved time for private study (homework, study halls)? Of course not. ... Until we honestly confront the inadequacy of school structure, we will continue to cheat students, frustrate teachers, and waste money.[9]

In *A Place Called School*, John Goodlad concludes:

> ... far-reaching restructuring of our schools and indeed our system of education probably is required for us to come even close to the educational ideals we so regularly espouse for this nation and all its people.[10]

Anne Westcott Dodd states:

> Band-aid solutions proliferate: a longer school day and year, more required subjects, more homework, higher pay for teachers. But more of the same is not necessarily improvement. ... America can develop a whole new structure for public education....[11]

Maurice Gibbons laments, "Ironically, when the old paradigm falls into disrepute, we do not make major changes; instead, we focus more intensely on those things we have always done...."[12] Selma Wasserman talks about an alternative system

> in which each learner sets his or her own pace in working toward mastery of course material; ... in which teachers play diagnostic and facilitative roles, rather than controlling and judging ones; in which the initiative of the learners is cultivated rather than thwarted....[13]

Harold Shane talks about "a growing need to *redesign* — not merely to reform — education in the U.S."[14] Ernest Boyer,[15] Seymour Sarason,[16] and Richard Brandt[17] all advocate some structural reform, and the list goes on and on. As Paul Berman put it, "The conclusion is inescapable: American education, *as it is now organized*, has reached the limits of its effectiveness."[18]

Comparing Systems

Educational systems are like other kinds of systems in many ways. How are other kinds of systems improved? Our transportation system consisted primarily of the horse for a very long time. Like the one-room schoolhouse, the horse was very flexible for meeting the needs of the individual; you could go almost anywhere you wanted to. But there were problems with the horse. It wasn't very fast or very comfortable, especially in bad weather. Now, some people spent a lot of time trying to reform the prevailing structure by doing such things as breeding faster horses and building better roads and bridges to improve the horse's speed, or making more comfortable saddles and creating carriages for the horse to pull to improve comfort. But the gains to be made were small compared with the development of an alternative structure, the railroad.

The railroad was far faster, more comfortable, more reliable, and more efficient than the horse. It could transport many more people much greater distances far more cost-effectively. But, like our current educational system, it was much less flexible; you were greatly restricted as to where you could go and when.

As society has continued to change, our transportation needs have also changed. We must travel ever greater distances in less time, and people need to have much more flexibility as to when and where they will go. Many people have spent much time "fine-tuning" the railroad. But the "quantum leap" again came from an alternative structure, in this case one that entails the use of a variety of transportation media, primarily the airplane and the automobile.

As the one-room schoolhouse, a "first-wave" educational system, was appropriate for what Alvin Toffler calls a "first-wave" agrarian society,[19] so our present, second-wave, educational system has a structure and philosophy that were appropriate for a "second-wave" industrial society. Although there are problems with the industrial production model of schooling,[20] one cannot help but note some structural similarities to an assembly line, whereby students move from one specialist teacher to another at the ring of a bell to have a new component of knowledge added to them. A "third-wave" system will provide a quantum leap for meeting the changing needs of our society, and like our current transportation system, it is likely that it will make use of a variety of means of learning, including peer tutoring, discussion groups, projects, and group activities of various kinds, in addition to well-designed, individualized resources and learning environments.[21]

Each structural change that has occurred in our transportation system has become possible only by the advance of technology, and in fact technological advances have made the rise of alternative structures inevitable. But the change is never revolutionary; it is evolutionary. Horses are still used for transportation in some places. Many trains are still in use today. And there are still many one-room schoolhouses. Structural reform is one of gradual replacement in places where the societal needs for change are strongest.

The process of structural reform in education will be a slow one for another reason as well. The more advanced our technology, the more room there is for improvements through fine tuning a structure. Look at how far the airplane has come since the Wright brothers' early days. How long was it between Kitty Hawk and the first transoceanic flight? How much longer until the first jet planes?

Although the change may be slow and gradual, it will also be sure. We can already see technological developments of the "Information Age" that are making structural reform inevitable. Since the invention of the printing press, there has been a gradual but steady increase in the use of nonhuman resources in the classroom, including textbooks, workbooks, handouts, and audio-visual materials of various kinds. Now, it seems that micro computers, because of their interactive capabilities, are greatly accelerating this trend. We are already reaching the point where the current structure of our educational system can no longer adequately accommodate the effective use of such resources. As more and better resources become available to relieve teachers of some of their more routine, boring tasks, we are likely to find even greater internal pressure for schools to adopt an alternative structure.

As we enter deeper into a "third-wave," highly technological, rapidly changing, information-oriented society, the present structure of our educational system will become more and more inadequate, both from the society's point of view and from the school's point of view, not to mention the child's point of view. According to Naisbitt, an information society requires a different kind of person, one who is more of an analyzer, evaluator, problem solver and creative thinker, one who has more initiative, more love of learning, and more responsibility for his or her learning and decision-making.[22] A third-wave educational system will provide a quantum leap in producing this kind of person.

In her excellent analysis of school reform reports, Patricia Cross[23] compares the kinds of structural reform needed in schools with the kinds of structural changes taking place in businesses as outlined by Peters and Waterman in their best-selling book, *In Search of Excellence*.[24] She concludes that

> In the long run, would-be reformers may be doing more harm than good, if they transmit the message that state officials can legislate and regulate educational excellence without paying attention to the task of creating climates of excellence at the local level. ... I have concluded that our commitment to the lock-step, time-defined structures of education stands in the way of lasting progress. It is simply unrealistic to think that all students can learn from the same materials, to the same standards of performance, in the same amounts of time, taught by the same methods.[25]

In sum, as we advance into the information age, our highly regimented, graded, lock-stepped, group-based, and time-oriented rather than achievement-oriented system is less and less able to meet the needs of the individual, the society, and the school itself. Changing the curriculum, lengthening the school day, and legislating higher standards are band-aid approaches to fixing a broken leg; and they are likely to do as much harm as good in the long run.

In reference to the problems cited by the Commission's report, it is the structure of our educational system that renders the selection of *content* relatively insensitive to teachers and parents — the two groups that perhaps should, as a team, have the strongest voice (with information and advice provided to them by "curriculum experts" and other concerned people). It is the structure of our educational system that leads to the establishment of "*minimum standards*" and expectations that are usually tailored to the least capable students in a class. It is the structure of the system that result in a very small proportion of the *time* in school being spent on actively learning. It is also the structure of the educational system that works against *quality teaching* by making it harder to teach well and by diminishing the rewards and incentives for quality teaching. Similarly, the structure of our system does not reward the kinds of *leadership* that are needed, and in fact it often rewards (or at least promotes) good bureaucrats and public relations people instead of good educational leaders.

But if this is true, how do we know that an alternative is feasible now? First, it is certain that an alternative will never be feasible if we don't work to develop it. If current feasibility were a necessary condition, the Wright brothers would never have gotten off the ground. But we are well beyond Kitty Hawk in the development of a "third-wave" educational system. The alternatives to a group-based, lock-stepped, time-oriented, graded system require the availability of well-designed learning resources and environments that are at once highly effective and highly motivating. Information technologies make it possible to create far better learning resources and environments than has ever been possible before, and those technologies are reaching a level of power and affordability that make them cost-effectively competitive for many educational tasks.

But "hard" technology (equipment) is only half the story. We haven't known enough about how to design effective and appealing learning resources and environments to make alternative structures for education feasible. Finally, that situation is changing and has in fact already changed enough so that a third-wave educational system is feasible.[26] The important question then becomes, "What would be a workable approach for determining the best structure and for implementing that structure?"

An Approach for Improving Public Education

Many problem solvers in business, industry, and education feel that initial efforts should entail thinking in the ideal, forgetting temporarily about constraints, and later compromising as necessary to implement a workable plan. When working with professors to help them to improve their courses, Syracuse University's Center for Instructional Development has found that many solutions that are initially thought of as unworkable under current constraints, are in fact workable, and that much better results are achieved by initially thinking in the ideal. In the ultimate analysis, this usually proves to be the most practical of all approaches.

Another important concern with respect to an approach for improving public education is that anything beyond fine-tuning of any system requires system-wide planning and modification. Any system that has evolved over as many decades as has our public education system, has certainly developed many interdependent parts; and a basic tenet of systems theory is that, if you try to significantly change one part, the system will almost always work to change it back again. In fact, except in cases where gradual but sustained changes in the environment have caused gradual changes in a system, important changes in systems have not been gradual, piecemeal developments; rather each has taken the form of a "quantum leap", followed by gradual fine-tuning.[27] Therefore, if we want significant improvement in public education, gradual, piecemeal modifications of the structure of the present system will not achieve the desired result. We need to develop an alternative system with a comprehensively different structure — a quantum leap. The alternative system would then slowly and gradually be adopted by school districts across the country — perhaps often as a single alternative school within a district — as it became evident that the new structure would be better for that community's needs.

The following is an outline of a strategy for facilitating this gradual transition to a third-wave educational system.

A Strategy for Significant Educational Improvement

The airplane represents a quantum leap over the railroad in long-distance transportation. And just as a better long-distance transportation system (the airplane) was planned, developed, and gradually implemented and improved over a significant period of time, so also a better educational system can only be planned, developed, and gradually introduced and improved over a significant period of time. In fact, any attempt to achieve widespread adoption of any significant structural innovation within a short period of time (such as occurred with Dewey's progressivism) is virtually doomed to crash, if it ever gets off the ground. The necessary training and coordination simply cannot occur effectively in such a short period of time, and the ideas and techniques inevitably become perverted and ineffective. Hence, the following strategy is offered:

Phase 1. Develop a comprehensive blueprint for an "ideal" third-wave educational system, with considerable input from education analysts, practitioners, reformers, parents, and students. To the extent that it is cost-effective, conduct research and field tests on parts of the system to improve (replace, modify, or supplement) them as much as possible before implementation of the first prototype.

Phase 2. Secure funding from private and government sources to implement a prototype.

Phase 3. Identify the community for implementing the first prototype, perhaps a new community that will be starting up a public school system, or perhaps a large city district in which the new system would function as an "alternative school" within the current system.

Phase 4. Select or develop necessary instructional resources (described later), train personnel, build or remodel facilities in the selected community, etc.

Phase 5. Open the prototype school and constantly monitor and revise the various aspects of the system until it operates effectively and smoothly.

Phase 6. Build an Institute to publicize result of the system, facilitate its adoption by interested school districts, train personnel (and train schools of education to train personnel), accredit schools (but this accreditation would supplement rather than replace state accreditation), monitor and disaccredit schools, and develop additional educational resources.

Adoption would be a local-school-district decision, and there would be severe limits on the number of new systems that could be implemented each year, because of the training and "retooling" requirements that could realistically be handled by the Institute. Within 10 years of the implementation of the prototype school, it is likely that fewer than five per cent of the nation's public school districts would have changed to the new structure. The limitation is not so much one of expense, for we do not anticipate that teacher training would be any more expensive than it is at present, nor would the buildings and resources be any more expensive. Rather the limitation is one of expertise. It will take time for schools of education to learn how to train the new type of teachers. Hence, the new system will be equally affordable for rich and poor districts alike. In fact, it seems plausible that the districts which are having the most trouble will be the first to want to adopt the new structure (especially if outside funds accompany it for the first year or two), thereby providing a significant means for redressing current inequality of educational opportunity.

We propose that this is a workable and not particularly expensive strategy for implementing a significant improvement in public education.

INITIAL PROGRESS ON A BLUEPRINT

The remainder of this paper reports on some preliminary efforts to develop a blueprint for the third-wave educational system (Phase 1 above). We organized a small team of theorists and practitioners, parents and teachers, to work for four months on the initial development of the blueprint. We decided to focus our attention on the *structural aspects* of an educational system, both because there is so much evidence that the current problems lie primarily in the structure of the system and because we feel that the people of a community should decide on the goals and content of their children's education.

Foundations

Many people look back at the one-room schoolhouse with a good deal of longing and nostalgia. As with most things from the "good olde days," the one-room schoolhouse was not everything that we, our parents, or our grandparents remember it as being. There were, however, several educational advantages that the one-room schoolhouse had over our present schools. The teacher worked individually with most students, in contrast to our present group-based system. Students progressed at their own pace, as opposed to our current lock-stepped or tracked system. Students were not promoted to learn new skills and knowledge until they had mastered the current ones (nor were they held back once they had already mastered the current ones), in contrast to our present time-oriented, graded system. The teacher was responsible for the *child* (as opposed to a content area), was concerned with the *whole child* (as opposed to just one aspect of his or her intellectual development), and was often a partner with the child's *parents* and thereby responsive to their desires and able to draw on their influence.

Also, there were considerable benefits from having children of a variety of *different ages* in the same room, such as opportunities for peer tutoring and role modelling. A teacher was able to work with each child over a period of years and, therefore, a thorough knowledge of each child and a consistency in monitoring and follow-through existed that is often lacking in today's schools. In the present, second-wave school system, where children usually rotate from one teacher to another each day and completely change teachers each year, the teachers often just begin to know and understand most of the children by the end of the school year. This results in many needs going unmet and in a great deal of inefficiency in meeting those that are eventually met. And perhaps most important, the teachers' reduced knowledge and understanding of each child usually results in a great deal less caring than existed in the one-room schoolhouse. The negative effects of this problem have been made even more severe by today's large and impersonal school environments, which have done much to foment alienation and violence in our youth.[28]

We do not in any way believe that a third-wave educational system should merely be a one-room schoolhouse with modern paint. Times and needs have changed too much for that. But we do believe that we should carefully consider the positive and negative structural characteristics of our present and past systems in attempting to develop a structure that will be "ideal" for a third-wave educational system.

Overview

In our current vision of a third-wave educational system, the teacher's role has changed from one of disseminating knowledge to one of motivating, advising, and managing the child's learning. Well designed resources (including interactive computer and videodisc systems), peer tutors, projects, and learning labs are used to convey most skills and knowledge. A teacher is responsible for a child for a period of three to five years. And the school district contains a variety of small, competing "schools" for parents to choose from (all at no cost to parents, and with no power for any school to turn any child away, thereby providing a degree of diversity and simultaneously a degree of accountability that are both sorely lacking in the present system). These and other aspects of the structure of a third-wave educational system are described next. However, it is important to keep in mind that these structural changes are not likely to be a solution to all our nation's educational problems. We hope it will help to encourage new ideas and to further developments in the design of a better school system.

Teachers as Guides

Most people who have advocated structural reform of our schools have called for a different role for teachers, a role that is more professional and that relies more on technology to free the teacher from routine tasks and drudgery. Accordingly, in the third-wave educational systems the relationship between the teacher and the child is not one of purveyor and receiver of information. First, not all learning occurs in schools; the parents and the community are important sources of learning. Therefore, one of the teacher's roles is to orchestrate and coordinate efforts by parents, community, and school. Second, within the school most knowledge is conveyed through well designed resources (including hands-on materials, printed materials, and interactive computer-based instruction), inexpensive assistants (including apprentice teachers, senior citizen volunteers, parents, and peer tutors), projects, discussion groups, learning labs, and resource people.

Hence, the teacher is more a guide than a teacher, as is the case in the Montessori system, which has functioned extremely well in this mode. The role of the guide is one of motivating, advising and managing the child, rather than delivering most of the content knowledge. The guide is a conductor rather than a musician. She or he is an instructional manager who helps the child and parents decide upon appropriate instructional goals (within limits) and then helps identify and coordinate the best means for the child to achieve those goals. And those goals go beyond the intellectual development of the child; they may extend to the child's physical, social, moral and psychological development, depending on the parents' wishes.

Guides work individually and in small groups with children to insure that they reach their goals. Therefore, there is no such thing as a "class" in the sense of a group of children who learn the same material in the same place at the same time for a whole term or academic year. (There are, however, occasional discussion groups and seminars, which are especially useful in such areas as literature; and some mini-courses utilize class meetings when better alternatives are not available.) Each child has individual educational goals and could be matched to a unique combination of resources with the help of a computer-based advisement and management system. The cost-effectiveness of this system is very promising and is discussed later.

Developmental Levels as "Grade Levels"

In the third-wave school system a guide is responsible for each of his or her students for one of the developmental stages of the child's life: a period of approximately 3 to 5 years. On the basis of work by Piaget, Erikson, and others, we currently conceive of four stages as being relevant to the school system: approximately ages 3 to 5, 6 to 9, 10 to 13, and 14 to 18. The school organization is structured around these four levels, enabling each guide to work with a child for an average of four years. Either the parents or the guide can request a change before the child has entered the next developmental level, but there is a "test period" of, say, 6 months during which no changes are allowed. The process whereby parents request a guide is described next.

Parents Choose Guides

Parents request a guide for each of their children. On the basis of information made available by an independent "consumer aid" type of district-wide office and on the basis of word of mouth and interviews with guides, the parents request in order of preference about three to five guides (depending on the size of the school district). The "consumer aid" office also provides diagnostic testing and interviews to help parents make the best decision, or to make it for them if they are not interested. Each guide decides how many children to accept each year, but does not decide which children to accept — that is decided by a formula that maximizes the number of first choices filled district-wide.

"Clusters" as Independent Schools

In other professions like medicine and law, professionals often work together rather than independently; and, unlike teachers, they maintain a high degree of decision-making participation in, and control over, the organization. In a similar way, even though parents choose an individual guide, that guide does not work independently, but is a member of a "cluster" of guides. A cluster usually consists of about 3 to 6 guides, their assistants, their students, and a leader, who is a "master guide."

Like a lawyer in a law firm each guide has considerable responsibility for the success of the cluster, and considerable incentive to meet that responsibility (see next paragraph), and considerable power to meet that responsibility. In the present system teachers are given the first but not the last two! Is it any wonder that the structure works against good results! Just as the "administrator" of a law firm is a practicing lawyer, so the master guide is an active teacher. But the master guide also has a variety of other responsibilities, foremost of which is instructional leadership for the cluster. Ultimately, the master guide has the major responsibility for the success of the cluster.

Incentives and Rewards

The cluster's success depends on how satisfied the parents and children are, because its income depends in part on the number of first, second, and third choice requests for all of its guides. But it is the income of each cluster that depends on demand for its guides, not the income of each guide directly. A guide's salary is based only on the number of students he or she has and the cluster's gross income. Hence, there is considerable incentive to help any guides in the cluster who are not doing well. This results in a nice combination of competition between clusters (providing incentive for excellence and responsiveness to the community's diverse desires and needs) and cooperation within each cluster (providing support and encouragement among guides), not unlike that characterizing most other professions.

With respect to competition, the dependence of cluster income on parental satisfaction makes guides very accountable for what they do or don't do. If a cluster is doing a bad job of meeting parental expectations, its income will fall, as will the income for all of its guides. With respect to cooperation within each cluster, the fact that a guide's income depends not only on his or her own efforts, but also on the success of the other guides in the cluster, results in much greater incentive to cooperate and help each other to insure that all the cluster's children do as well as they can.

Learning Labs

In the fields of law, accounting, and medicine, a general practitioner has access to specialists in different areas. In a similar way, a guide has access to various learning labs. A learning lab provides instruction in a specific subject area. It can be a traditional, discipline-oriented area such as biology or a cross-disciplinary, problem-oriented area such as pollution. These learning labs operate completely independently of the clusters.

All children in the school district receive a certain number of passes or tickets that entitle them to use the learning labs. The labs in turn receive their budgets on the basis of the number of passes that they collect, so there is considerable incentive to attract students and satisfy cluster guides' needs. Again there is a nice combination of competition between labs and cooperation within a lab. We currently envision three types of learning labs: "shopping mall" labs, site labs, and mobile labs. They are described in some detail later.

In summary, the major aspects we currently envision for the third-wave educational system are the following:

1. Teachers are guides who, in cooperation with the child's parents, motivate, advise, and manage a child's education for 3 to 5 years.
2. Resources (including well-designed materials, peer tutors, projects, discussion groups, learning labs, and resource people) are used to effect most of the learning.

3. There are no traditional "classes," but each child has individual goals; and a unique combination of resources and approaches is prescribed to reach those goals.
4. Guides work cooperatively within an educational cluster with about 2 to 5 other guides, including a master guide.
5. The master guide sets the school climate and philosophy, hires guides and assistants, provides professional development for guides and assistants, and provides direction and leadership for the whole cluster.
6. After a trial period, parents are free to request to move their child to another available guide and cluster if they are not satisfied with their child's progress. Hence, individual guides and clusters are very accountable for what they do or don't do, and they have considerable incentive to work with parents.
7. Guides have a great financial incentive to cooperate and work together for the success of the whole cluster.
8. Guides can send children to learning labs of various kinds to receive the best available instruction on selected subjects.

The following is a more detailed description of the various aspects of the structure of this third-wave educational system.

Cluster Operations

Because the guide is the hub of this educational universe, we shall further describe the structure of the system on that level. As was mentioned above, every guide must belong to a cluster, which is much like a small law firm or medical clinic. Also, a guide is responsible for children for one complete level of development (approximately four years). In an exceptional case, a guide might prefer that his or her students be spread out over two or even three levels, rather than just one. In such cases it is probably advisable that children switch to a different guide upon transitioning to the next level.

Each guide often uses apprentices (training to become guides), advanced students, and volunteers (including parents, senor citizens, and other members of the community) as assistants to help teach his or her students. Many receive credits for their services, rather than money. Those credits entitle them to personal use of the learning labs for continuing education or the child care center for care of their own children. Tutoring is also a valuable experience for students. There is an apt adage that "The best way to learn something is to teach it." Students are a very much overlooked resource that can save a school system much money, improve learning, and result in great benefits for the tutors. But they must have proper training and guidance to be most effective.[29]

At this point, our best guess is that in Level 1 (ages 3 to 5) each guide is responsible for about 25 children, in Level 2 (ages 6 to 9) about 35 children, in Level 3 (ages 10 to 13) about 45 children, and in Level 4 (ages 14 to 18) about 55 children. These differentials reflect the increased use of learning labs as the age level increases. The services of apprentices, advanced students and volunteers considerably lighten the load of each guide. However, these figures are our best guess at present, and experience may reveal better figures.

As mentioned earlier, each guide decides how many children to accept; that is, what portion of a "full load" to accept. The importance of parent satisfaction keeps this figure from becoming too large, and the guide's personal income needs keep it from being too small. But if a guide wants to work half time on, say, writing a book or computer program, then he or she can do so by accepting fewer students (and receiving a lower income).

Anywhere from about 3 to 6 guides can comprise a cluster. With 4 guides in each cluster, there would be one guide on each of the four developmental levels, assuming that the cluster elects to serve all four levels. Such a cluster would have about 160 children spread out over the ages of 3 to 18. This means that there would be an average of about 10 children of any given age within the cluster. If the cluster serves only two developmental levels, there would be an average of about 20 children of any given age within the cluster. This size allows the children to get to know most other students in the cluster fairly well, resulting in a more friendly and caring environment and more cross-age interaction.

Specifics by Level

In Level 1 the guides are very similar to Montessori teachers.[30] They introduce children to well-designed educational resources as the children become ready for them, and the resources do most of the teaching of knowledge and skills. The guides also arrange activities that help develop the child socially, emotionally, and physically (motor coordination). Children are exposed to a variable environment in which caring guides and assistants nurture their development and encourage them to alternate regularly between learning activity and social interaction, free play, exercise, and/or rest.

Most learning at this level takes place within appropriate cluster facilities, but field trips are occasionally taken so that the outside environment can influence the children's development. Mobile labs (discussed in the next section) and other outsiders (including parents) occasionally come and put on a program to enrich home-room activities.

Parents can leave their child in the cluster facility as long as they wish, but there is a charge if the child is left for more than six hours per day. This charge can be paid in money or in time contributed to the cluster. The more advanced children occasionally participate in activities in a Level II group. This facilitates their transition into the next level with a minimum of anxiety (even if the child advances to a different cluster). The timing of the full "graduation" to the next level is made in consultation with the parents and is based on a combination of the child's intellectual, social, and emotional development, including level of learning skills and degree of self-directedness and responsibility.

In Level 4 the opposite end of the developmental spectrum, the cluster facility is more of a conference room than a home room and activity room. Almost all content learning occurs in the learning labs, including lab-sponsored seminars, projects, and tutoring sessions. Also, intellectual scavenger hunts entailing interdisciplinary problem solving are widely used. Guides spend much time monitoring and motivating the children and just plain caring. Much time is also spent in individual conversations, for the guide is more a counsellor (an educator in the true sense of the word) than a teacher. In the domain of cognitive development, those conversations are often directed at higher levels of knowledge, including synthesis and evaluation in Bloom's taxonomy[31] and cognitive strategies (or generic skills) in Gagne's taxonomy.[32] Service projects are often required of students.

The guide also works closely with the parents on such other concerns as the child's emotional, social, artistic, moral, and psychological development. This entails (1) identifying with the parents any aspects of development that need work or any obstacles to further development that need to be removed, and (2) developing with the parents an appropriate plan that entails certain parental actions, as well as certain guide actions of which the parents approve. As parents who have occasionally felt as if we were at our rope's end with one of our children, we feel it should also entail providing advice — when desired by the parents — on how to handle behavior problems and how in general to increase the quality of home life.*

On the intervening levels (II and III), the guides serve both roles described above (for Levels I and IV). The degree to which each role is played by the guide progresses as the child develops from a Level I person to a Level IV person.

At whatever level, each guide must abide by a "renaissance approach" that establishes certain minimum levels of development in each of a broad range of basic areas (including basic skills). I have wonderful memories of a summer camp in which we campers were allowed to go to whatever activity we wanted whenever we wanted. There was a big chart on which achievements in each activity were posted for each camper, and we had to progress by at least one level of achievement in each activity every week. That way, when we want to do an activity that we didn't particularly like, we decided when to do it and we weremotivated to get it done as quickly as possible. And we all tended to far exceed the one-level minimum in activities that we liked. Also there were points given for each achievement, and campers were members of teams that competed to get the highest number of team points.

Similarly, in the third-wave educational system, as long as the minimum levels of achievement are met in all areas, the children can study whatever they want, whenever they want. As might be expected, the yearly and quarterly minimum levels vary depending on the general ability level of the child. For example, a child with an IQ of 50 is not expected to achieve the same minimum levels as one with an IQ of 150. Benjamin Bloom has evidence to suggest that the differences in rate of learning that currently exist in our schools are more a function of differences in accumulated skill and knowledge deficiencies than of differences in "intelligence."[33] The emphasis is on each child achieving according to his or her potential. For "late bloomers" the minimum levels are adjusted to represent relatively larger steps.

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* I have recently learned of a public high school — the Bishop Carroll School in Calgary, Alberta, Canada — which has many of the structural features described here. It has been in operation for about 20 years, and its students consistently outperform the others in the district.

The guide maintains an achievement profile on each of his or her students on a computer-based advisement and management system. Grades are not given, because in an information society, a profile of the kinds of abilities and knowledge one has is more important than a letter grade or a general rank in class.

There are cluster-wide and district-wide interest groups and clubs, dealing with such interests as computers, drama, photography, woodworking, music, chess, and dance. There are also cluster-wide and district-wide social events and athletic events. A major benefit of this structure is a much higher rate of student participation in athletics and other interests. Opportunities for leadership and exercise of responsibility are also increased.[34] Volunteers (parents, senior citizens, and other community members) and older students do much of the supervision, much as is presently done with Little League baseball and Scout programs.

Learning Labs

It was mentioned earlier that learning labs provide specialized expertise on different subject areas; and we have recently seen that the older the child, the more the labs are used. A learning lab can be for a traditional, discipline-oriented area such as biology or for a cross-disciplinary, problem-oriented area such as pollution. And it can be for an intellectual area such as philosophy or for a technical area such as automobile maintenance and repair. In all cases, labs would be encouraged to incorporate instruction in thinking skills and other higher-order skills into the content area instruction, and guides would be responsible for helping the student to put together a program of study that represents a good progression of such higher-order skills instruction. Resources are allocated to the labs on the basis of their usage, providing a combination of cooperation and competition similar to that for the clusters.

We mentioned earlier that there are three types of learning labs: mobile labs, "shopping mall" labs, and site labs. The mobile labs are labs on wheels that travel around from one cluster to another and even from one district to another. The shopping mall labs are centrally located, with easy access from all of the clusters. They range from a one-room, one-person (part-time) "craft shop" operation to a nationwide operation (the Sears of the shopping mall labs). There tends to be continuous (although not too frequent) turnover as the "offerings" adjust to changing times and changing demands. Also, there are cooperative arrangements whereby children may use labs located in another school district. The site labs are located at the part-time organizations which sponsor them, such as museums and businesses. Tax deductions are an important incentive for the creation of such labs.

All learning labs must be approved and periodically recertified by the school district's Lab Management Organization (described later). Learning labs can be started by almost anyone in any subject area, including cross-disciplinary areas, but certain training and standards (especially regarding character) are required. A learning lab director runs the lab; and depending on the nature of the lab, the director finds out about and makes available top-quality resources, plans good activities, makes arrangements for community-based experiences, hires, trains and monitors assistants (apprentices, advanced students, parents, and other members of the community) to help teach, and/or interacts personally with children to motivate, advise, and manage their learning within that specialty area. Teachers refer their students to specific learning labs and even to specific personnel in a learning lab. Many learning labs are run by part-time amateur/hobbyists and retired people at very little expense to the school district.

Logistically, the shopping mall labs are usually located at the "hub of a wheel" in which the clusters are located in separate buildings out on the "rim," attached by enclosed walkways ("spokes"). This arrangement eliminates the need for transportation and allows for district facilities such as library, auditorium, child-care facilities, and food services to be easily accessible to all clusters, while still maintaining some physical separateness for each cluster. (Although food preparation could be done centrally, each cluster should have its own cafeteria to help build cluster cohesion.) Very large districts might have several such "wheels" at different locations within the district. Although such a logistical arrangement might be ideal, existing school buildings could be used with relatively few modifications to meet the same needs.

How the Student Uses the Learning Labs

At the beginning of each quarter (three month period), each student in the district is awarded a certain number of learning lab passes. The exact number depends on the child's level of intellectual development — the higher the development, the more passes awarded, because more of their learning occurs in learning labs. Also, each child can earn additional passes through such activities as tutoring, helping with the preparation of displays and materials, and supervising extra-curricular activities.

Some of the passes are "restricted" passes and some are "open" passes. The restricted passes must be used for the study of skills and knowledge specified by the child's "quarterly contract" (see below), whereas the open passes can be used to study anything. This results in a combination of structure and flexibility similar to that of the summer camp described earlier.

Each pass must be filled out and signed by the guide, who indicates the lab in which it is to be used. This helps the guide to influence and keep track of the child's learning. The child hands in the pass to the lab, so that the lab can then cash it in for payment from the district office. The passes could be implemented electrically with magnetic ID cards and electric time clocks that feed data on student and lab usage into the district-wide, computer-based, advisement and management system. Teacher approval would be entered into the computer system, and the system would reject any child who tried to log in to a lab without such approval. Each lab allows each student a minimum of one hour of free "browsing" every quarter for purposes of seeing if there is anything he or she would like to learn in that lab. Of course, the lab receives remuneration from the school district for such browsing.

Having a limited supply of passes to use in a quarter, the children are more concerned with making the most of each one — that is, not wasting precious time "hacking around." And having the flexibility to study what they want when they want (within the structure of the minimum requirements and the other goals specified in each child's quarterly contract) provides heightened motivation and increased self-determination and self-management that are so important in an information society.

What the Student Does

At the beginning of each quarter, the guide sits down with each of his or her students and the student's parents, if possible. Together, they prepare a plan or contract for the child's learning goals and activities for the quarter. As a result of this plan, a checklist of required goals and activities is prepared (probably with the help of the computer-based advisement and management system), and the use of restricted passes is planned. However, the plan is devised in such a way as to leave some time for children to pursue their own interests with their open passes, whose use is also discussed and informally planned at the beginning of each quarter.

The intent here is to establish a balance between structure and flexibility. Each cluster may establish its own policy (or lack thereof) with respect to the balance between requirements and options, except that the district may establish certain minimum levels of development in different areas for different age groups (perhaps adjusted by individual limits to rate of development as measured by, say, IQ or some better indicator).

At this time, the guide and parents may also have a private conversation about any problems the parents are having with the child so that the guide can give advice and/or take steps to help out. The guide also identifies things the parents can do or need to do to help the child achieve his or her quarterly goals (not just intellectual, but also emotional, social, artistic, and physical).

At the end of each quarter, the guide sits down with each child and the parents (although two separate meetings would not be uncommon) and reviews the child's achievements in relation to the contract for the quarter. This provides part of the basis for planning the next quarterly contract, which usually occurs at the same session.

Extensions of the Present System

The present educational system is extended in two important ways, in addition to the concern for nonacademic aspects of the child's development: (1) it is open longer and (2) it is open for use by adults. It is open longer in three ways. It is open more hours per day, until, say, 9:00 p.m. This is done at very little extra expense because it is largely supervised by volunteer help. It is open on weekends, again at little extra expense due to volunteer help. And it is open on vacations, including all summer long.

Students can take vacations whenever their parents want, due to the individualized structure of the school. Similarly, guides and staff can take their vacations pretty much whenever they want because of the multiple-leveled staffing structure of the system (apprentice guides, volunteers, and older students). Guides feel less of a need for a long vacation in their new roles, and this eliminates the need for teachers to find summer employment at what are often not very rewarding (professionally or financially) jobs. Hence, it makes education a year-round profession, like law and medicine, with flexible opportunities for vacations.

Adults (people over 18 years old) can buy or earn passes to use the learning labs, making the school system a place where young and old can learn together. It also provides an extra source of income and labor for running the school system.

District Organization and Administrative Systems

All school tax revenues, block grants, and state aid go directly to the school district office for district-wide distribution. The district office establishes a budget for clusters (probably by establishing an amount per pupil and multiplying by the number of pupils anticipated for that year) and a budget for the Learning Lab Management Organization (probably by establishing an amount per pass and multiplying by the number of passes anticipated for that year). The budget for clusters is allocated to each cluster in accordance with the demand for its guides. The budget for the Learning Lab Management Organization is allocated to each lab in accordance with the number of passes it receives, except that a certain percent is kept to meet its administrative expenses. Finally, the Consumer Aid Organization receives a flat percentage of the total school district budget (around one-half of one percent), and the district office keeps a flat percentage for its administrative expenses.

Cluster Organization and Administration

A new cluster can be started by anyone who meets the requirements, but a cluster can be disbanded if it ever fails to meet minimum standards set by the school board (and individual personnel can be "disbarred" if they are found by the district review board to be negligently unprofessional). It is probably wise to specify a minimum of two or three guides for forming a cluster. Training and certification are required for anyone who wants to be a guide. This training and certification would be provided by schools of education that have been certified by the Institute. Some local training may also be required regarding the district's computer-based advisement and management system and current learning labs. The master guide is chosen by the guides that comprise the cluster, and a 2/3 majority is required to replace the master guide.

For an established cluster, the hiring of new guides is decided by a 2/3 majority of the cluster's guides. The firing of a guide would be based on standards that are clearly laid out in the charter of the cluster or school district regulations, but those standards should allow a sufficient length of time for new guides to improve and for older guides to reform their ways. Because of the importance of cluster cohesiveness and cooperation among guides, a simple majority is sufficient for a cluster's guides to decide whether or not the criteria for release have been met. There is no grievance or appeal procedure, again because of the importance of cluster cohesiveness and cooperation among guides. There is no grievance procedure when a lawyer or doctor is kicked out of a law firm or medical clinic, but such is extremely rare.

An administrative person from the district office is in charge of the accounting, reports, and logistical aspects for all clusters within the school district, but the cluster decides how its budget will be spent. This frees the head guide to concentrate on instructional concerns and school climate.

It was mentioned earlier that each cluster's gross income is dependent on the total demand for its guides. A point system is used whereby each guide receives 3 points for being the first choice of a "new" student, 2 points for being the second choice, and 1 point for being the third choice. A "new student" is one entering a new level of development, one entering the school system for the first time, or one requesting a new guide after the six-month trial period. The "income rate" for each cluster is determined solely by the cluster's total points divided by the number of guides in the cluster. The cluster's budget is then determined by adjusting that income rate according to the average percent of "full capacity " for its guides (determined by the actual number of students divided by the full-load number of students for each developmental level). In turn, the guides' salaries are based only on cluster budget and individual load — no merit — and are a percent of the cluster's gross income. Hence, the only way to increase one's salary, as in a law firm or medical clinic, is to increase the demand for the cluster' guides. In this way, there is a tremendous incentive to cooperate within each cluster. All master guides receive a fixed salary supplement set by the school board.

It might be beneficial to have two levels of guides based on merit, such that a beginning guide would likely not receive the same salary rate as a veteran guide. However, this raises difficult questions as to who should make the promotion decision. Alternatively, it might be beneficial to allow each cluster to set its own salaries, for the guides will know that if their other budget categories suffer, parents will be displeased and the cluster's points — and budget — for the next year will be lower.

Some districts may also want to allocate a certain fixed dollar amount per student to each cluster's budget, to partially even out the expenditures per student across clusters. However, it should be understood that the more the cluster (and lab) budgets are influenced by demand for them, the easier it will be for superior ones to grow and thereby offer a better education to more students in the district. It will also be less necessary for the district office to close down weak clusters (or labs) by executive mandate, which is likely to be politically difficult, if not impossible. This will be less necessary because insufficient personal incomes will lead the guides in less successful clusters to seek more lucrative positions on their own initiative. In the long run the community will be better off by rewarding excellence and not encouraging mediocrity to linger on.

Learning Lab Management Organization

There is a learning Lab Management Organization which has the following responsibilities:

- It surveys the needs of the clusters for external instructional support (from labs) and prioritizes those needs.
- It contracts new learning labs. These may be (1) part-time individuals (e.g., a retired biologist who lives in the community and is willing to devote a part of her time to the school district), (2) part-time organizations (e.g., a local museum or business which is willing to devote a part of its time to the school district), (3) full-time individuals (e.g., a mechanic who would like to quit his job and work full-time with kids), and (4) full-time organizations (e.g., a publishing company that has established a subsidiary for running learning labs in schools across the country).
- It trains lab directors whenever necessary, and it provides professional development support services to the labs upon request.
- It distributes money to the labs according to the amount that each lab is used.

An *administrative* person in the district office is responsible for the accounting, reporting, and logistical aspects for all labs within the school district, but again each lab decides how its budget will be spent.

Consumer Aid Agency

The district-wide Consumer Aid Agency which was mentioned earlier serves (1) as a placement counseling service for matching children with guides and (2) as a watchdog service for providing, "consumer reports" on clusters, guides, and learning labs (explained below). This Consumer Aid Agency is run by parents (many on a volunteer basis) but receives a permanent fixed budget (something like one-half of one percent of the total district budget) as part of a system of "checks and balances".

The Consumer Aid Agency's *counselling service* helps parents to decide which guide will be best for their child. It maintains extensive data on each guide's characteristics and accomplishments, and it diagnoses a child's needs if parents so desire, so as to enable them to select the guides which seem most likely to meet those needs. Such people-categories as "intuiter" and "thinker" may be very useful for part of this function.

The Consumer Aid Agency's *watchdog service* has responsibility for collecting and disseminating information about the quality of performance of the clusters, guides, labs, and Lab Management Organization.

Given that some parents do not care enough to choose a guide for their child, the placement service diagnoses each such child's needs and applies for the most appropriate guides. However, such applications are not included in the point count described under "Cluster Organization and Administration" above, to avoid the temptation for dirty politics. Federal, state, and local supplements for disadvantaged children would be passed through the district office directly to the clusters' budgets.

Cost-Effectiveness

No thorough cost analysis has been performed as yet, but preliminary indications are that this system would cost approximately the same per student as our present system, yet would be considerably more effective. Although guides are paid more than present teachers, their various assistants (apprentice guides, volunteers, and older students) cost considerably less. Their use enables a much higher student-guide ratio, but with increased human contact and caring.

The learning labs are the element that may most influence costs. The number of labs and relatedly the number of passes provided to students each quarter will greatly influence the cost. Also, the extent to which the labs are staffed and/or directed by volunteers or semi-volunteers (those who accept nominal payment to supplement retirement or other income) will also greatly influence the cost.

In a small school district, it might be wise for each guide to also serve as a lab director, with fewer students to guide. We presently anticipate that this entire system can be run within present school budgets, especially given that local businesses, foundations, and individuals would be considerably more inclined to sponsor learning labs, including basic-skill and content-area shopping mall labs, as well as more application-oriented and problem-oriented site labs.

CONCLUSION

Much work needs to be done to further develop, field test, and refine this "blueprint" of a third-wave educational system to the point where we can begin to think about implementing it in a pilot school. And this only represents the first step in a systematic strategy to make significant improvements (a quantum leap) in our educational system. Although the road to meaningful, structural reform of public education is long and difficult, we feel that the strategy and approach are both very sound. With persistence and dedication from a national coalition of concerned citizens, we feel confident that we can achieve very significant improvements. He would be interested in hearing from anyone who would like to be a part of this effort.

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SKETCHES IN THE REDESIGN
OF THE LOCAL SCHOOL DISTRICT

by Ray Budde

Abstract. One means for reforming American public education is to change how local school districts are organized and how they function. Miller's categories of subsystems and Kuhn's concept of the interdependent qualities or states of subsystems are helpful in determining just what "system" is. Implementing a redesign of six key components of the organization of local education would be sufficient to change the basic character and direction of a school district. The obstacles to making these kinds of substantial changes in organization would be formidable as the power structure of the local school district would be radically altered. Changes of this magnitude need to be made within the context of a five to ten-year period of planning and development.

Most of the committees and task groups which studied the condition of the public schools in the early and mid-1980's concluded that there were serious flaws in the way we in America are educating our children and youth. That this should be a matter of serious concern to the citizens of this country is strongly implied in the title of the first study which was commissioned by President Reagan shortly after he took office: A Nation at Risk: the Imperative for Educational Reform.[1] If the very nation is at risk - and, presumably, educators bear some of the blame - we in education had better do something about it! But what?

The remedy in the past when we were confronted with reports of serious weaknesses in public education was "to improve the parts":

- "Raise teachers' salaries so that more of the ablest and talented young people will enter teaching."
- "Beef up teacher education. Put more substance and reality into how we train teachers."
- "Raise standards. Do more testing of competency in basic skills. Strengthen graduation requirements."

- "Tighten up the discipline. Make schools orderly so that pupils can learn."
- "Improve the textbooks and other instructional materials. Install computers in every classroom (or at every desk)."
- "Strengthen preparation and inservice programs for principals and superintendents so that the schools are better managed."

But this is the approach we have used for decades - and schools have changed very little. An alternative "to improving the parts" is to make substantial changes in how schools and school districts and the education-serving agencies are organized and how they function. This entails as an initial step a major effort in redesigning educational organizations.

Focusing on the school district

Most of the effort resulting from the studies advocating educational reform have focused on various models for redesigning the individual school. It is my positon that unless the total school district (which includes the school board, the superintendent, the central office staff, specialists, department heads, and teachers) is restructured the changes at the school level will soon be compromised and weakened.

If we're going to redesign the school district, where do we go to find "it" - the structural timbers - the framework within which "education happens" from day to day?

James Miller provides us with a total, almost universal, umbrella for identifying the subsystems which make up any "living system." Clearly, a school district is an organization in his "shred-out" of all the levels of living systems.[2] Dr. Miller lists 18 separate subsystems that are components of his example of an organization, a modern ocean liner.[3] The local school district might well have fewer subsystems in that it is predominantly an information system rather than a matter-energy system.

Alfred Kuhn has contributed much to my thinking about just what the rock-bottom meaning of the concept of system (or organization in operation). The system is not the collection of entities or subsystems in the system, but rather the interdependence and the interlocking of a specific set of chosen properties (or qualities or states) of those entities or subsystems - this is what makes up the system.

> The elements, or components of a system are not the entities in the system, but qualities or states of those entities. In the thermostatic system, it is not the air in the room, but its temperature which in the element in the system. It is not the thermostat, but the position of its switch. It is not the furnace, but its state of being on or off. Similarly, the environment is not the outside air, but the temperature of the outside air along with the properties of the wall which will determine how fast heat will move between system and environment.[4]

Thus changing the system of the school district involves moving from the present set of qualities or states of the subsystems to a new set of desired or chosen qualities or states of the subsystems of the school district. It is not necessary to change the state of every subsystem. Changing the states of a number of the more important subsystems will force changes in many of the states of other subsystems - as it is the states, the qualities of the subsystems which are interdependent and interlocked.

Redesigning six organizational components of the school district

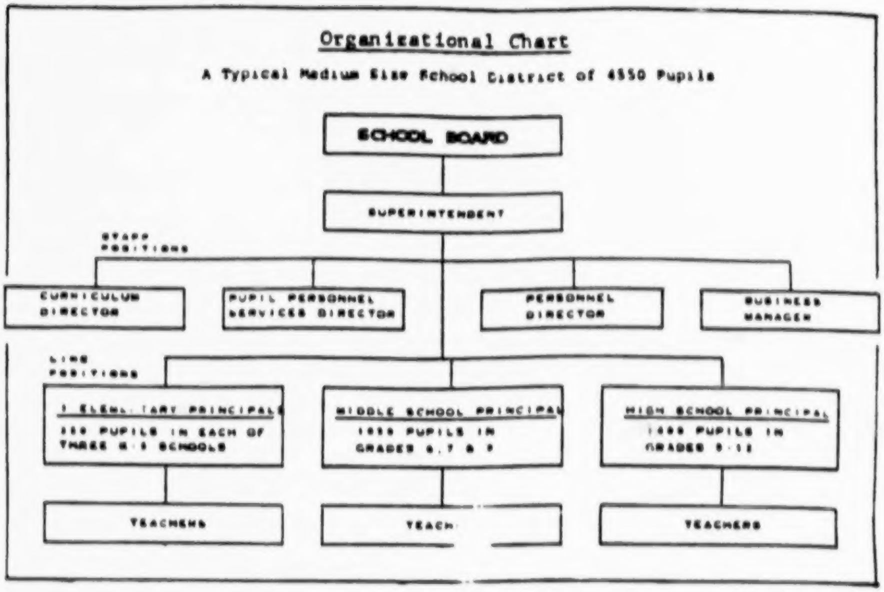
Now let's do a bit of a redesigning; some "organizational imaging" will give us some idea of what the school district of the next century might look like. Without regard for "how we get there from here," let's redesign six components or subcomponents of the organization of the school district:

- Decision making related to the control of the function of instruction.
- How the year is used/divided for the purposes of schooling.
- Compensation plan for certified professional staff.
- Career patterns for teachers, specialists, and administrators.
- A major mission of the school.
- Instructional materials and sources of information for teaching.

Sketch 1.

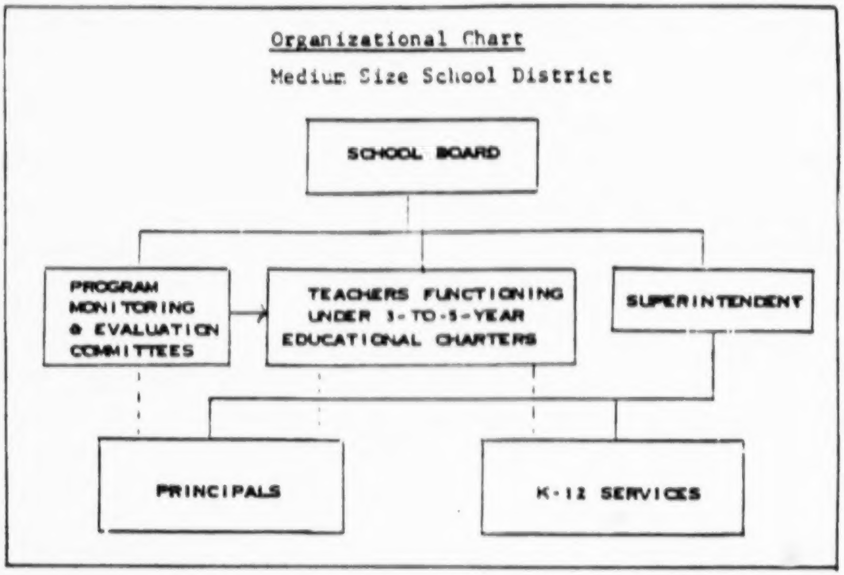
REDESIGN THE FRAMEWORK FOR CONTROL OF INSTRUCTION. . .

FROM A FOUR-LEVEL LINE AND STAFF ORGANIZATION. . .


Organizational Chart

A Typical Medium Size School District of 4550 Pupils

TO A TWO-LEVEL FORM OF ORGANIZATION IN WHICH GROUPS OF TEACHERS RECEIVE EDUCATIONAL CHARTERS DIRECTLY FROM THE SCHOOL BOARD.


Organizational Chart

Medium Size School District

SCHOOL BOARD
PROGRAM MONITORING & EVALUATION COMMITTEES
TEACHERS FUNCTIONING UNDER 3-TO-5-YEAR EDUCATIONAL CHARTERS
SUPERINTENDENT
PRINCIPALS
K-12 SERVICES

Comments

- The present administrative hierarchy of the school district has been well over a century in the making. Teachers have been and continue to be at the bottom level of the organizational chart of the school district.
- Under collective bargaining, the school board and administration tend to hold on to the control of curriculum and instructional matters as being within "management rights."
- There is a flavor in the recommendations of a number of the educational reform reports which call for: "Teachers need to have more autonomy." "Teachers should have more of a say in the decision-making process." . . . Given the strength of the present structure, these proposals may simply be rhetoric. Books on "democratic leadership" were being written back in the 1950's!
- "Education by Charter" accomplishes a number of purposes, chief of which is to give teachers full responsibility for instruction - the professional area for which they have been trained and the field in which they have been publicly certified.
- Teachers' control over the function of instruction is counterbalanced by a carefully designed "inside-outside" system of program monitoring and evaluation.
- Computer technology now enables a school board to fund educational charters for periods up to five years despite the fact that revenue is still received annually and that decisions may be made during the life of a charter that will effect the total cost of the programs and services covered by the charter.

Sketch 2. REDESIGN THE SCHOOL YEAR TO PROVIDE FIVE MORE WEEKS OF EDUCATION FOR STUDENTS AND A FULL WORK YEAR FOR TEACHERS. . .

BY MOVING FROM A 182-DAY YEAR FOR STUDENTS AND A 186-DAY WORK YEAR FOR TEACHERS. . .

School Calendar - 1985-1986
- 182 days for students
- 186 days for teachers*

FALL SEMESTER - 91 DAYS
13 days for holidays/vacation

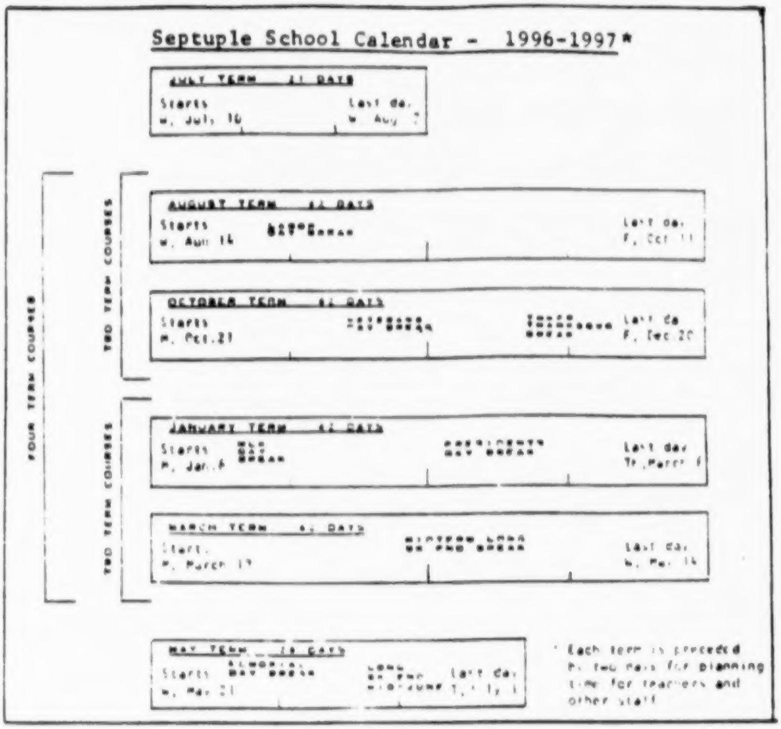
Starts Tuesday, September 2 — Last day, Fri. January 24

SPRING SEMESTER - 91 DAYS
7 days for holidays, vacation, and snow days

Starts Monday, January 27 — Last day, Tues. June 17

*Wed. & Thurs., Aug. 28 & 29 and Wed. & Thurs., June 18 & 19: Teachers' meetings and opening & closing school.

TO A 217-DAY "EDUCATION YEAR" FOR STUDENTS AND A 229-DAY FULL WORK YEAR FOR TEACHERS.


Septuple School Calendar - 1996-1997*

* Each term is preceded by two days for planning time for teachers and other staff

Comments

- The rationale for the present 9 1/2 month rural-based school year is no longer viable. Yet this pattern for use of the year is deeply imbedded in our culture.
- Summer programs which have required students to attend have done poorly. Summer programs where attendance is voluntary do much better.
- The hot continental summer which much of America experiences in July and August makes it almost impossible to hold school in non-airconditioned buildings.
- A new, extended school year can be designed using holidays as starting, inbetween, and ending points for terms of varying length.
- After considerable trial and error, the author found that Base 7 was the most useful factor in building terms, and half-terms and an easy-to-use credit system.
- The decimal credit system provides for numerous ways to give "Education Credit" for experiences in the 21-day, 28-day, and 42-day terms. (21 hrs. = .1 unit; 42 hrs. = .2 unit; 210 hrs. = 1 unit.)

The SEPTUPLE SCHOOL CALENDAR might just work. . .

- *If* a great deal of creative thought goes into how to use the five extra weeks of schooling.
- *If* "Education Credit" can be given to such activities as: supervised work experiences; learning experiences in summer camps and in community recreation programs; independent study projects; and group and family educational travel.
- *If* schools can be flexible enough to accommodate family vacations at any time during the year.
- *If*, over a period of years, teachers can use part of their work time in professional, non-teaching activities such as: planning; writing curriculum materials; half-term and term-long sabbaticals; and filling administrative and specialists positions.
- *If* airconditioning is installed in a sizeable number of classrooms in the school district.
- *If*, on the rationale that the reform of public education is necessary for the society to survive and propper, the federal government funds the costs of extending the school year provid- that extension is a part of a total reform plan of the school district.

Sketch 3.

REDESIGN THE SALARY SCHEDULES FOR TEACHERS, SPECIALISTS AND ADMINISTRATORS. . .

FROM SEPARATE SALARY SCHEDULES AND PLANS WHICH COMPENSATE SPECIALISTS AND ADMINISTRATORS AT HIGHER LEVELS AND RATES THAN TEACHERS. . .

Salary Schedules (Annual Salaries)

CERTIFIED PERSONNEL WITH MASTERS DEGREE AND TWELVE YEARS OF EXPERIENCE

1988 - 1989 School Year

POSITIONS	WORK WEEKS PER YEAR		
	36	42	48
Superintendent			$ 66,000
High Sch Principal			56,000
School Psychologist		$ 48,000	
Elementary Principal		44,000	
Guidance Counselor		40,000	
Classroom Teacher	$ 32,000		

TO A SINGLE "PROFESSIONAL EDUCATORS SALARY SCHEDULE WHICH COMPENSATES TEACHERS AT THE SAME LEVEL AND RATE AS SPECIALISTS AND ADMINISTRATORS.

Professional Educators Salary Schedule

ALL CERTIFIED PERSONNEL WITH MASTERS DEGREEE AND TWELVE YEARS OF EXPERIENCE

1996 - 1997 School Year

POSITIONS	WORK WEEKS PER YEAR	
	42	48
Superintendent		$ 66,000
High Sch Principal		66,000
School Psychologist	Contracted services	
Elementary Principal	$ 55,000	
Guidance Counselor	55,000	
Classroom Teacher	55,000	66,000*

*For "Lead Teacher" who works full year.

Assumptions

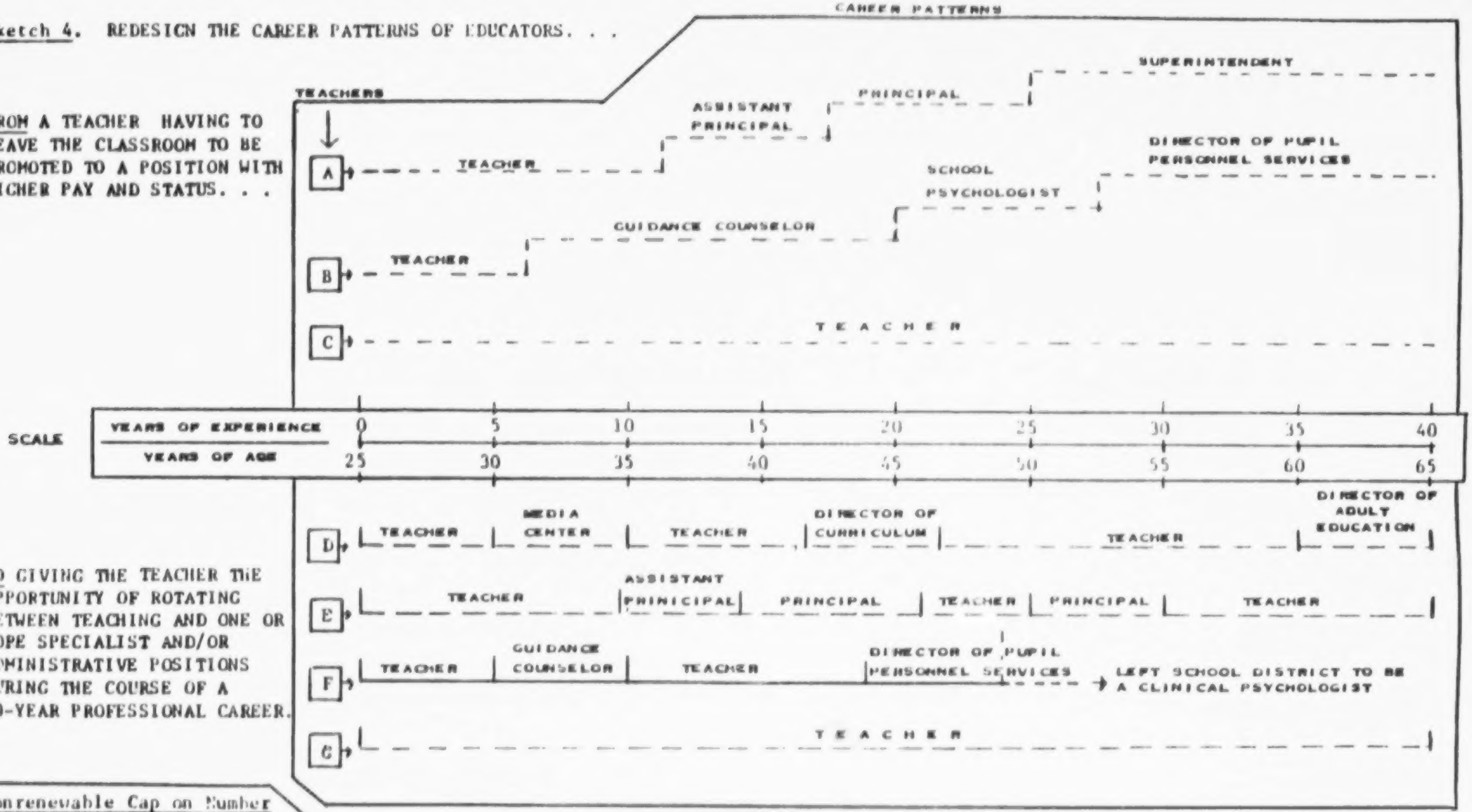
- By 1996, the school year in many communities will be four weeks longer for students and five weeks longer for teachers.
- Given inflation and some adjustment in the salary level for teachers generally, a salary of $55,000 for a teacher with a masters degree and 12 years of experience would be plausible for a 42-week work year.

Comments

- Schools exist to pass the culture on to the next generation and to prepare that generation to live in both today's and tomorrow's world.
- The teaching profession is prepared for and is publicly certified to carry out this mandate of the public schools.
- A teacher should not have "to get out of the classroom" in order to have a full-time job, to earn sufficient money to support a family, or to achieve a higher degree of status in the field of education.
- One way to recognize the crucial importance of teaching as a profession is to pay teachers at the same rate as specialists and administrators.
- From within its staff and from other school districts and sources, a school district would always have an ample number of qualified applicants for any specialist or administrative position (even though the person who would fill that vacancy would be paid on the same level as a teacher).

Sketch 4. REDESIGN THE CAREER PATTERNS OF EDUCATORS. . .

FROM A TEACHER HAVING TO LEAVE THE CLASSROOM TO BE PROMOTED TO A POSITION WITH HIGHER PAY AND STATUS. . .



TO GIVING THE TEACHER THE OPPORTUNITY OF ROTATING BETWEEN TEACHING AND ONE OR MORE SPECIALIST AND/OR ADMINISTRATIVE POSITIONS DURING THE COURSE OF A 40-YEAR PROFESSIONAL CAREER.

Nonrenewable Cap on Number of Years in Non-Teaching Role

YEARS	—	POSITION
10	-	Superintendent
7*	-	Principal
5	-	K-12 Director
5	-	Counselor
3	-	Asst. Principal
2	-	Admin. Assistant
1	-	Intern

*May return to principalship for 5 yrs. after one year of classroom teaching.

Comments

- o "Educational Administration," "School Management" are not tight, rigorous disciplines or fields. Teachers need high levels of administrative and managerial skills to be successful.
- o Former teachers are already filling more than 90% of all specialist and administrative positions.
- o With few exceptions, every professional would be on the same salary schedule and would work the same number of weeks each year.
- o Laying the organizational chart "on its side" provides a teacher with numerous options for a diversified career during 40 years in the profession.
- o A teacher wanting to fill a specialist or administrative position would have to meet all state requirements for that position.
- o All administrative and specialist positions would be open to outside applicants
- o A teacher would gain important skills and insights through filling other positions during his/her career.

Sketch 5. REDESIGN THE CURRICULUM TO CHANGE ONE OF THE MAJOR MISSIONS OF PUBLIC EDUCATION. . .

FROM A CURRICULUM. . .	TO A CURRICULUM. . .
With a predominant emphasis on mastering almost limitless amounts of of content with only marginal effort devoted to information-seeking and information-using skills and attitudes.	With a predominant focus on building the skills and attitudes for lifelong learning with a highly focused, long-term mastery of very carefully selected content.

Comments

- o It is estimated that the amount of knowledge is now doubling every three years.
- o Traditional fields of knowledge and disciplines of study have been breaking apart and recombining. Interdisciplinary studies and double-name fields abound.
- o Through various kinds of technology, a pupil sitting at a desk in the classroom (or at home) can now have access to this expanding universe of knowledge - in whatever categories are useful.
- o Learning some kind of definable amount of content during 13 years of school is no longer a viable major mission of public education.
- o The pupil of the 1990's who will become the adult of the next century needs to develop the skills and attitudes to become a lifelong learner - and this needs to become one of the major, continuing missions of the public school.
- o Required content should be highly selective. Methods of checking mastery and reenforcing longterm, useable memory need to be developed which transcend the confines of a single school year.

Sketch 6. REDESIGN THE WAY IN WHICH TEXTBOOKS AND INSTRUCTIONAL MATERIALS ARE OBTAINED. . .

FROM OVER-RELIANCE ON...	TO GREATER USE OF...
Bland, water-downed, generalized, picture-full textbooks and textbook series... and commercially prepared spirit and copy machine masters.	-Teacher written and designed books, instructional mtls, and aids. -Original sources from libraries, data banks. -Student-created books and materials.

Comments

- o Many of the major textbook publishers are now part of large corporate conglomerates. Present managers are under considerable pressure to show high profits.
- o High profits are made in publishing by selling large quantities of series of textbooks and materials in as many states as possible.
- o The quality of commercial texts and materials is diluted by several factors: the biases and regulations of a number of large states who approve a limited number of series for adoption in the state; needing not to offend regional or national special interest groups; lowering the level of vocabulary so that pupils reading below grade level can "handle it"; and extravagant use of pictures and other visuals - this done as a perceived necessity because pupils watch so much television.
- o Technology in the publishing industry now makes it possible for a school district or a consortium of school districts to set up an "Educational Materials Publishing Department": various options in offset presses; word processing computer software for preparing camera-ready typed manuscripts; software which enables any office to do "desk-top" publishing; and multi-color copy machines.
- o With an increasing emphasis on having pupils write and illustrate their own poems, stories, and reports, it might be time to revive an "old technology," the hand-operated spirit duplicator. This would give pupils hands-on publishing experience right in the classroom - and with seven-color capability!
- o The increasing availability of data banks and discs and "fax machines" will give students and teachers easier access to a rich variety of original source materials.

Usefulness of the theories

One could argue with some justification that the six entities chosen for redesign do not fit very well into Miller's 18 subsystems of a modern ocean liner. I would agree that this is an awkward fit.

- Locus of decision making (Sketch 1) clearly fits as part of the subsystem of "Decider(de)."
- The length and structure of the school year (Sketch 2) and the mission of the school (Sketch 5) could be viewed as conceptual "Boundaries(BO)" of time and objective.
- The compensation plan (Sketch 3) is an important dimension of how the "captain and crew" of the school district are sustained and motivated.
- Career plans (Sketch 4) are patterns of position-holding by personnel of the school district over 40-year periods of time.
- Instructional materials and sources of information for teaching (Sketch 6) are obviously "inputs" which move through several of the subsystems.

The match might have been more exact had the example for the level of organization been an information system such as a college, an adult learning center, or a research corporation.

The interdependence or the "interlockedness" of the new states of these six entities (Kuhn) is much more obvious. We need to start with the premise that the main reason the school district exists is to carry out the function of instruction.

- Giving teachers responsible control over instruction makes teaching the premier professional position in the school district.
- This fact is recognized by giving teachers a full-time job and paying them as the same rate and level as specialists and administrators.
- With teachers on the same work year and compensation plan as other professionals, they can then build diversified careers (according to their interests and qualifications) by having the option of moving out of and back to the classroom to and from specialist and administrative positions.
- Giving teachers significant amounts of time for planning and

curriculum development linked with the decentralized capabilities brought on by technology in the graphic arts and copy machine industries now makes it possible for teachers to write their own textbooks and create their own learning materials for the classroom. Access to ever-expanding data banks of information adds a very exciting dimension to providing materials for learning.

- There is a flip side to teachers having responsible control over instruction. Teachers being in charge of the function for which they are trained and publicly certified would make it incumbent on them to assume as their number one responsibility that of helping pupils take charge of their own learning. This is especially important during a time which is now designated as the "Age of Information." Developing the attitudes and skills to become lifelong learners is crucial for today's pupils if they are to prosper and survive as adults.

Need for a long-term view

Changing these six entities in the organization of local education would undoubtedly result in an observably different kind of school district. But there is no quick fix here. Redesigning a school district and implementing the new model of organization is not going to happen within the confines of a single school year - or even two or three school years.

The fictitious superintendent in Education by Charter, "Dr. William Wright," presents the community with a ten-year plan for totally reorganizing the "Hometown Public Schools."[5] This kind of span of time allows for a number of things to happen.

- A multi-year, computer-based program budget format can be developed, tested, and adopted.
- Groups of teachers can develop plans for educational charters and then, if the charters are granted, can field test teaching under the charters for three, four, or five years.
- As needs develop and anxieties rise, appropriate inservice and staff development activities can be planned and carried out.
- Genuine roles can be developed for parents and other citizens on charter planning committees and charter advisory committees.
- Principals have sufficient time to try out new roles as supporters

of instruction rather than administrators over instruction. The flexibility of educational charters would encourage a principal to be part of a teaching staff of a charter in his/her field of expertise.

- The school district could develop within the schools or the community the capability of producing its own texts and instructional materials. Arrangements could be made to access the many regional and national data banks which could provide information which would enrich classroom instruction.
- A network of outside persons from universities, other school districts, and other institutions could be formed to monitor and evaluate the impact of organizational changes over a sustained period of time.
- Ten years allow time for the superintendent to take advantage of retirements and other terminations to start institutionalizing the notion of a single educational profession within the school district.

. . . .

Redesigning a school district or any other social institution is indeed a challenge. It's ironic that the person who is providing the most publicity about making fundamental changes in the structure of organizations is Chairman Mikhail Gorbachev with his drive for "perestroika." But whether we call it redesigning, restructuring, reorganizing, or even "perestroika," the next few years will provide many exciting opportunities for the members of the International Society for System Sciences who are able to cross the boundaries of the disciplines and fields and draw ideas from many sources to create models for tomorrow's institutions.

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ABOUT THE AUTHOR

Ray Budde has served as a teacher, junior high school principal, director of instructional services, assistant professor of educational administration, and director of an area special education services collaborative.

There were three areas of emphasis in his doctoral work at Michigan State University: sociology, child growth and development, and educational information.

The concept of "Education by Charter" was first introduced to the Systems Education Section of the 1974 annual meeting of the Society for General Systems Research. The title of the presentation as subsequently published in the proceedings was: "Education by Charter - Key to a New Model of School District."

Dr. Budde now works as a consultant in school district organization and written communications.

EDUCATIONAL RESTRUCTURING:

AN EARLY LOOK

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December, 1988

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EDUCATIONAL RESTRUCTURING:
AN EARLY LOOK

Introduction

The present "restructuring" movement has been spurred by the belief that the existing educational system, designed in the early 1900s, is not up to the modern day challenges it faces. Instead "restructuring advocates" assert that schools must make fundamental changes in the ways that teaching and learning activities are designed, organized, and delivered to learners -- if they are to prepare learners to be productive and effective members of today's society. Yet within this basic agreement on the need for change, current restructuring efforts reflect differing views about what form such change should take and how best to bring it about. As a means of better understanding the direction the movement seems to be taking and how it might be enhanced, this Brief offers a framework for looking at current restructuring efforts and the assumptions underlying them.

What Is Behind the Restructuring Movement?

First, the current wave of restructuring efforts represents a natural outgrowth of the excellence movement, which established a reform agenda consisting of general goals at which schools could aim. While the emphasis was on what constituted effectiveness, there was less attention to how the goals could be reached. Restructuring efforts, on the other hand, tend to be concerned, at least initially, with creating structures, processes, and conditions for change (e.g., establishing leadership teams, decentralizing, empowering teachers). As such, restructuring can be described as a logical and natural successor to the excellence movement.

Second, the problem faced by schools, especially those in urban settings, are enormous, some say paralyzing. Many urban educators have become convinced that the existing schooling patterns and practices will have to give way to new ones. Doing something about the achievement gap between minority and disadvantaged youngsters and their counterparts is now recognized by many as the most serious problem facing urban education.

Third, much has been said about the compatibility between our present educational system and the industrial age -- an age we are moving away from. Now schools must be concerned with meeting the educational needs of the information-oriented age -- an age that demands different competencies for leading productive and satisfying lives.

Fourth, A Nation at Risk and virtually every national report issued since stress the economic dangers facing the United States. A decline in economic productivity, vigorous challenges to America's long dominance of world markets, and economic growth no longer a "given," are indicators of the danger. Economic competitiveness has become a powerful challenge in goading the educational system toward improving its quality and relevance for a post-industrial society.

Finally, there have been major advances in basic research and applied technology that will significantly influence both learning and instruction. From cognitive psychology comes different conceptions of how learners learn. And advances in computer technology (e.g., information storage, retrieval, and manipulation, artificial intelligence) will permit very different types and levels of interaction between learners and a knowledge base.

These conditions contribute to a complicated problem mix and add urgency to educators' natural tendencies to want to improve the educational system. As a result, slow and steady improvement of the existing system is no longer seen by many as acceptable. Major change, restructuring, and redesign of that system are fast becoming the watchwords.

What Do Restructuring Efforts Look Like?

Realignment perspective. Most of the change efforts of the last decade (e.g., professionalization of teaching, clarification of instructional goals, improvement of school climate and discipline, lengthening of the school day) reflect the idea that positive change in education means shoring up the existing system. The questions that guide this approach are: How can we realign or refocus school programs and practices to better meet existing goals and standards? How can we do things right (vs. are we doing the right things)? "Realigners" are mainly concerned with improving the overall performance of the school in accordance with existing goals and priorities, with solving various problems, or with implementing new or modified practices to increase efficiency or effectiveness.

Redesign perspective. The advocates of redesign, on the other hand, perceive American schools as heading into real trouble and unable to steer out of its way. They call attention to the widening gap between the learning needs of individuals in a modern, information-rich society and the practices and requirements of schools patterned mostly after a bygone industrial era. They point to dramatic demographic shifts occurring in urban areas and claim that schools are unable to cope with the resulting needs of increased numbers of students from culturally diverse backgrounds. They cite discouraging statistics about the dropout rate among minority students, substance abuse, teenage pregnancy, and other indicators of social deviancy. They see nothing less than major redesign as a necessary response to the present and projected future needs for learning and human development.

The redesign perspective holds that quite different ways of organizing and delivering educational services are needed. Included in this perspective is the belief that schools ought to anticipate emerging and future needs of learners, given the changing conditions of the community and larger society, rather than merely react to specific issues or problems that arise. The entire system (its goals, functions, programs, policies and structured arrangements) should be open to question and reformulation. Important questions in this perspective include: What role should the educational system play in the new society? What should education accomplish? What functions should it perform? Whom should it serve? How should it be organized?

These two perspectives represent highly divergent viewpoints. More often than not, restructuring efforts fit neither extreme. Instead, they are more likely to overlap. Figure 1 displays a framework we are using to examine educational restructuring efforts. Each of the three primary dimensions are described as consisting of a continuum of four levels. The general implications for educational change as a result of choosing to focus at specific levels include the following:

- Choice of any level as the starting point always assumes the eventual inclusion of lower levels. The same cannot be said of higher levels.

- Staying at the first level in each dimension will result in the least change.

- Moving from the first level to higher levels tends to lead the educational system toward more comprehensive redesigns of purposes, functions, roles, and practices.

- Staying at the first level may create more efficient educational systems, but may result in less attention to the issue of appropriateness.

- Moving from the first level to higher levels tends to be more complicated, requires longer time frames, more professional commitment, and probably has the greatest potential for creating the kinds of educational systems our present and future society needs.

The dimensions and level definitions are as follows:

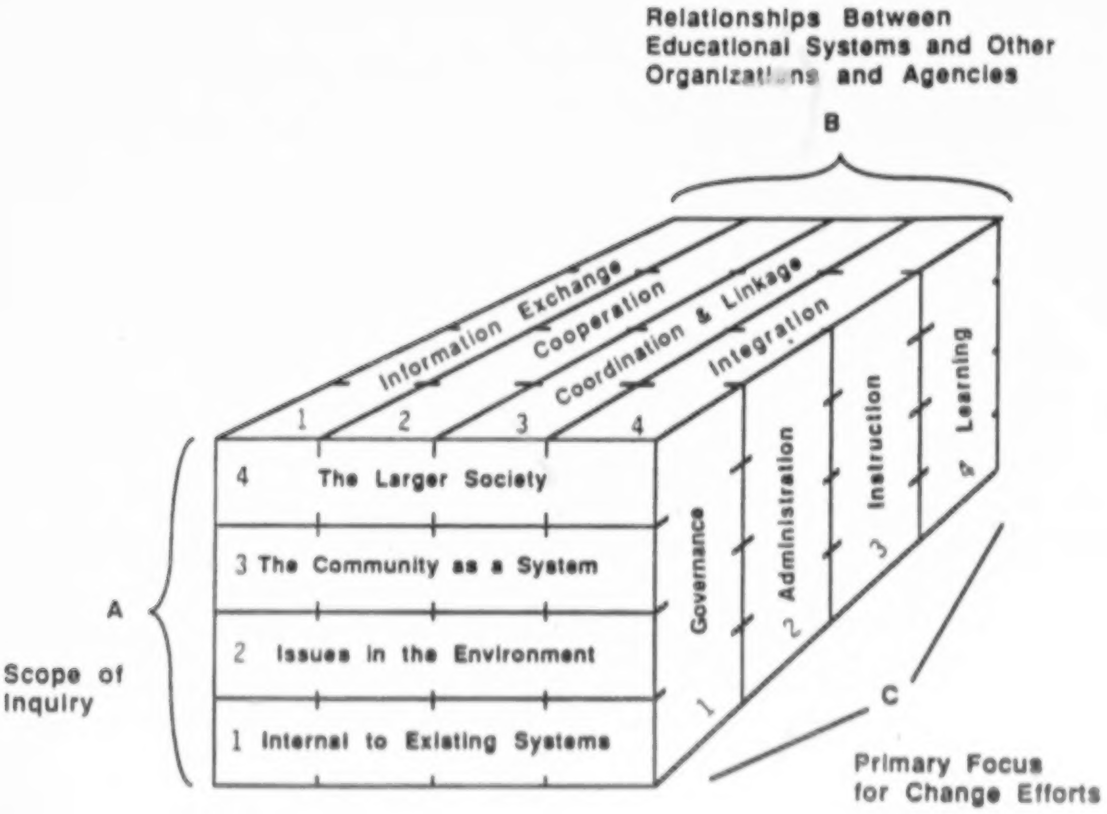
A. Scope of inquiry or level of examination.

1. The Existing Educational System. The inquiry is limited to the specific operations and accomplishments of the school or district. For example, an inquiry or analysis might be limited to issues surrounding management, communication, instructional effectiveness, staff development, school climate, decisionmaking, curriculum, discipline, etc.

2. Issues to Which the Educational System Must Respond. The inquiry is focused on issues in the environment. The nature and causes of problems such as student failure, dropouts, drug abuse, student pregnancy rate, job preparation, etc., become the primary focus for analysis and subsequent design efforts.

Figure 1

Framework For Exploring Educational Redesign Options



3. The Community. The inquiry is expanded to include the community as the unit of analysis in terms of its problems or issues, its values, needs, and resources as they relate to teaching and learning. The potential contributions of a wide variety of other agencies, organizations, and institutions to the educational enterprise are examined.

4. The Larger Society. The inquiry is further expanded to include the present and future knowledge and competency requirements of effective citizenship in a global environment that is becoming increasingly complex, technology-based, and dependent on cooperation and negotiation.

B. Relationships between educational systems and other organizations and agencies that have or will emerge from the restructuring effort.

1. Information and Resource Development and Use. The effort is limited to identifying and using resources in the community to supplement instructional/learning activities.

2. Cooperation. Schools, districts, and other agencies cooperate to achieve common goals or to conserve resources. Participants remain separate entities but there may be considerable contact and sharing. Some joint decisionmaking and planning is common.

3. Coordination, Linkage, and Collaboration. There is more of a shared endeavor, ownership of the enterprise is spread among the participants, and decreased autonomy occurs; a high level of commitment among members of participating groups (classes, schools, districts, other organizations and agencies) is needed. The organizational arrangements for accomplishing the shared goal are formal and remains intact as long as the goals are present.

4. Integration. The highest level of multi-organizational arrangement for accomplishing work involves the formation of a new organization from existing ones that have common interests. Schools or school districts may become part of a larger educational system made up of a variety of organizations (public and private schools, higher education, public and private community agencies, business and industry, associations, etc.). Such agencies integrate all or a portion of their resources and services into a separate entity that assumes the responsibility for designing and carrying out the learning and development functions for the community. The specific roles and functions of the various participating organizations emerges from an educational redesign process.*

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*We are not aware of any educational change linkages at this level.

C. Primary focus for the effort.*

1. Governance. The change effort focus is in modifying the role and functions of institutions with responsibilities for education.

2. Administration. The focus is on changing functions of people, procedures, or processes related to supporting the instruction. Communication, instructional decisionmaking, resource allocation, performance evaluation, staff development are examples.

3. Instruction. The focus is on instructional practices, instructional strategies, learning environments, curriculum and learning materials and other issues of major concern to teachers.

4. Learning. The initial focus is on the learner and the knowledge, skills, values, etc., that are required for effective and productive citizenship now and in the future. Based on these competencies and attributes, what learning experiences will best serve? All other design decisions (instruction, etc.) are based on these decisions.

What does the current wave of restructuring efforts look like when viewed from the framework? To find out, nine school district sites were identified where comprehensive reform is the stated intention. In addition, three fairly recent reports advocating major reform or "restructuring" were included in the analysis (see Figure 2). The cases used for this "first look" were selected primarily because of easy availability of information (e.g., descriptions of plans and expectations or reports). Given the well-known vulnerability of plans during implementation, "second looks" at these sites well might reveal shifts in emphasis. Based on this initial analysis, however, some conclusions can be drawn about current restructuring trends.

- Most restructuring efforts have, at least initially, limited the inquiry to existing educational systems. Although such efforts may have been motivated by problem issues (dropouts, drug abuse, attendance), attempts to deal with the issues tend to focus on changing some aspect of the existing school. An alternative would be to ignore the existing school for the moment and focus the inquiry on the larger society as a means of creating very different conceptions of schooling.

- Most restructuring efforts tend to rely on their own resources but have looked to the community for activities to extend or supplement instruction. Field trips and career days are common examples. There are a few incidences of movement

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*The successive levels for Dimensions A & B imply expansion (from internal to external). The opposite is the case for Dimension C. The key concept for this dimension is that the focus moves from the educational periphery to the "core technology" of learning and instruction.

FIGURE 2

GENERIC CHARACTERISTICS REFORM: SITES/REPORTS	SCOPE OR LEVEL OF EXAMINATION				SYSTEMS INTERACTION				PRIMARY FOCUS OF CHANGE			
	EXISTING EDUCATIONAL SYSTEMS	ISSUES OUTSIDE SYSTEM	THE COMMUNITY	THE LARGER SOCIETY	INFORMATION EXCHANGE	COOPERATION	COORDINATION AND LINKAGE	INTEGRATION	GOVERNANCE	MANAGEMENT AND ADMINISTRATION	CURRICULUM/INSTRUCTION	LEARNING
Sites												
CAMAS (WA)	✓	✓	✓		✓					✓	✓	
CHICAGO (IL)	✓	✓			✓	✓					✓	
DADE COUNTY (FL)	✓	✓	✓							✓		
JEFFERSON COUNTY (KY)	✓									✓	✓	✓
MERCED (CA)	✓											
NARRAGANSETT (ME)	✓				✓					✓	✓	
ROCHESTER (NY)	✓									✓		
SAN DIEGO (CA)	✓	✓	✓		✓	✓				✓	✓	
SANTA FE (NM)	✓	✓								✓	✓	
Reports												
CALIFORNIA BUSINESS ROUNDTABLE (Restructuring California Education)	✓	✓			✓					✓	✓	✓
CARNEGIE FOUNDATION	✓	✓			✓					✓	✓	
HOLMES GROUP (Higher Education)	✓				✓					✓	✓	

toward cooperation (joint planning, and resource sharing) but more advanced types of relationships such as collaborations or integrations of two or more agencies for educational purposes are rare.

- Most restructuring efforts have focused at the administration level to modify the decisionmaking processes (e.g., decentralizing, teacher empowering, leadership teams) or at the instructional level (e.g., curriculum revision, teacher training, grouping procedures). Few, if any, have begun with identifying the kind of competencies that learners need to possess in order to function effectively in the present or future society and then moved to a consideration of instructional strategies, roles, and resources to help learners acquire those competencies.

What Is Needed to Enhance the Movement?

Ideally, educational restructuring efforts would advance toward the higher levels of inquiry, relationships, and focus for effort and become educational redesign efforts. But such advances will not be made easily. A successful redesign strategy will probably contain the following elements:

- Recognition of the urgency that surrounds all education, but particularly in urban settings.
- A willingness to entertain new perspectives and new visions about learning and learners.
- Leadership for and competencies in the process of design inquiry.
- Willingness to collaborate with other groups, agencies, and organizations to accomplish common goals.
- Organizational structures within the system to facilitate inquiry and decisionmaking.
- Institutional policies to encourage inquiry and design and incentives to reward or reinforce progress.
- Models, processes, capabilities, and motivation to obtain and use information for consensual and ethical decisionmaking.
- Sophistication about and willingness to confront the barriers that most systems face when engaging in change efforts.
- A strongly supported professional and institutional development program to support inquiry, design, and implementation.